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FEBRUARY, 1920

VOL. XLVI

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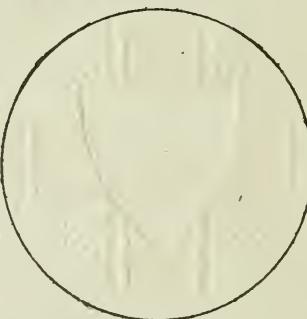
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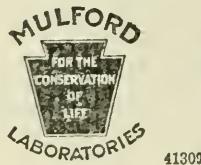
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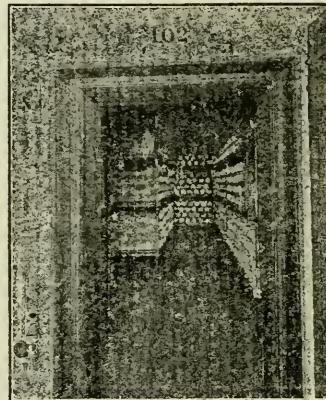
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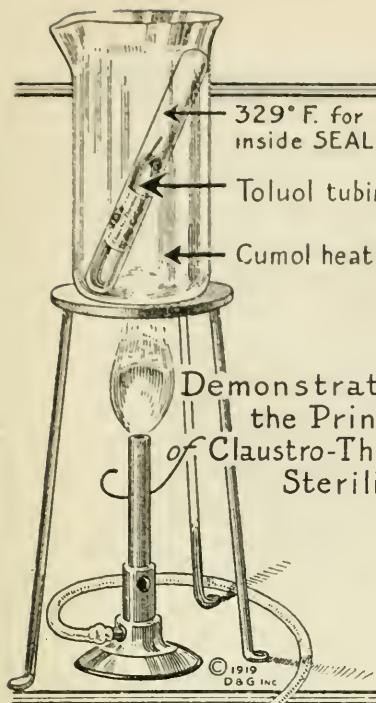
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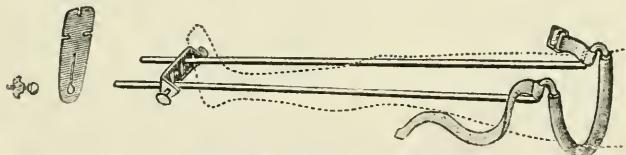
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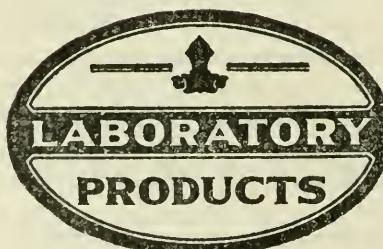
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# THE MILITARY SURGEON

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FEBRUARY, 1920

NUMBER 2

## ORIGINAL ARTICLES

Authors alone are responsible for the opinions expressed in their contributions

### CONSTIPATION AS AN ARMY PROBLEM<sup>1</sup>

BY CAPTAIN WILLIAM R. WOODBURY

*Medical Corps, United States Army*

(With five illustrations)

#### I

CHRONIC constipation is a common complaint in the Army. The failure to prevent it invites attention. In civil life it is impossible to get at the true facts of this common ailment or to control or correct it. In the Army comes the opportunity to get the facts, and to correct and prevent this unphysiological condition. Army men are a selected group, admission to which depends upon the result of a careful physical and medical examination. Every act, fact and feature of the soldier's daily life is controlled and regulated—food, exercise, clothing, work and sleep. Both the men and the conditions are closely supervised every hour of the twenty-four hours of every day. Army regulations determine and control every act in the daily life of the soldier, save one. Irregular or missed bowel action not infrequently unbalances the day's work. Retained and accumulated intestinal waste held within the body lowers fitness; it puts a drag upon physical and mental energy. Habitual constipation makes low-powered, substandard men.

"Constipation is better than diarrhea," is an old military adage. In the War of the Rebellion "constipation was the most frequent of the diseases of the digestive organs." During the five years ending June 30, 1866, there were reported 145,960 cases of constipation among the white troops, an equivalent to an average annual rate of 65.5 cases per thousand of strength. Among the colored troops the cases of constipation numbered 17,204, or 93.8 annually per thousand.

These figures represent only the more serious cases. Those occurring

<sup>1</sup> Authorized by Col. Roger Brooke, Chief of Division of Internal Medicine, Surgeon General's Office.

in the hospital population are not included.<sup>2</sup> "The number of reported cases of constipation is so large that it must give a very just idea of the actual distribution of this condition among our troops."<sup>3</sup>

Not infrequently constipation is a fore-stage of diarrhea or dysentery. Without the presence of the fecal masses a part of the material for decomposition would be wanting; the process of reduction would not attain the intensity; their products their acrimony; nor the irritation the local duration and mechanical increment necessary to generate a fully developed dysentery. A condition which results in the retention of the intestinal waste, and thus extends the time for the completion of the retrogressive process, intensifies irritation, and aids in establishing inflammation. The unhealthy alimentary conditions are determining momenta of irritation to the intestinal mucous membrane. In a general way the ingestion of large quantities of any food which is difficult to digest may cause intestinal disorder, but the condition of the individual is often more important than the character of the food. That which is disposed of readily by robust digestive organs may be wholly unmanageable by men whose digestive functions are in any way impaired. In army reports a form of diarrhea is recorded which is common among newly enlisted men, and which is preceded by several days of constipation.<sup>4</sup>

In the War of the Rebellion the summer rates of constipation were larger than those of the winter months. "The increased prevalence of constipation in the summer may be attributed to the irregularity introduced into the personal habits of the men during this season of active campaigning. Even the calls of nature were often deferred on the march or other toilsome service until a more convenient opportunity, which, when presented, not infrequently found nature irresponsive. Certainly many of the cases thus originating culminated in a subsequent diarrhea, which was reported, although the preliminary condition of constipation remained unnoticed."<sup>5</sup>

Dr. Woodward makes record of the fact that precisely where diarrhea and dysentery were least frequent constipation was most prevalent. The average annual rate of constipation in the region of the Pacific was

<sup>2</sup> "Every soldier excused from duty even for a day is placed on sick report. A soldier suffering merely from constipation, who receives a purgative from the medical officer, is reported as a case of constipation if excused from duty."—*Medical and Surgical History of the War of the Rebellion, Part Second, Medical Volume*, p. 632.

<sup>3</sup> *Medical and Surgical History of the War of the Rebellion, Part Second, Medical Volume*, p. 632, and *Part Third, Medical Volume*, p. 873.

<sup>4</sup> The conditions favorable to proper digestion are wholly abolished when unpleasant feelings, such as worry, anxiety or vexation, or great emotions, such as fear, prevail. Obviously, the spastic visceral states should be relieved. Drastic purging causes a reaction unfavorable to orderly digestion.

<sup>5</sup> *Medical and Surgical History of the War of the Rebellion, Part Third, Medical Volume*, p. 873.

132, in the region of the Atlantic, 70; in the Cetral region, 60. Whereas the fluxes were least frequent in the Pacific, and most frequent in the Central region.<sup>6</sup> An investigation was made. The Pacific region was garrisoned by an average strength of about 10,000 men, or less than one-fortieth of the troops from which the medical statistics of the war were gathered. This garrison was exposed to few of the hardships and toilsome duties to which their comrades on the eastern side of the continent were subjected. Minor ailments came up for sick report. "Constipation was more frequently reported, although not of necessity more frequent in its occurrence, while diarrheas were less prevalent, in part at least, because of the increased attention paid to the preliminary condition of constipation."<sup>7</sup>

These facts point to the connection between torpidity of the bowels and diarrheal conditions. This relationship is of practical concern for the sanitary officer and the clinician.

Chart<sup>8</sup> A shows the prevalence of constipation, headache and neuralgia per thousand of strength in the War of the Rebellion for five years, 1862-66. The most frequent of the diseases of the nervous system, in that war, was headache, with neuralgia following closely in order of frequency. The parallelism of the lines of constipation and headache is noteworthy. "It suggests that the Army might have been preserved from much of its sickness reported under the term headache had the causes of constipation been better known and more effectually shunned. Neuralgia seems to have been due to conditions in which the individual rather than his surroundings constituted the prime factor."<sup>9</sup>

In the International Nomenclature constipation is not recognized, by title, as cause of admission to sick report. Only exceptionally is it listed in army reports.<sup>10</sup> In 1916 at the United States Military Academy, at West Point, there were 663 hospital admissions, of which 152, or 22.92 per cent, were for diseases of the digestive system; and 52 (quite one-third) were admitted for "constipation." For the same year (1916) constipation is reported as one of the principal diseases for admission to sick report among the United States troops in Alaska, with an admission rate of 4.03 for enlisted men. Alaska is the healthiest region in which the Army is stationed. In the Philippine Islands the admission rate, for the same year and the same cause, was 27.63; in Hawaii 20.65, and excluding venereal diseases, constipation showed the highest admission rate of all the principal diseases. With the

<sup>6</sup> *Ibid.*, Part Second, Medical Volume, p. 632.

<sup>7</sup> *Ibid.*, Part Third, Medical Volume, p. 874.

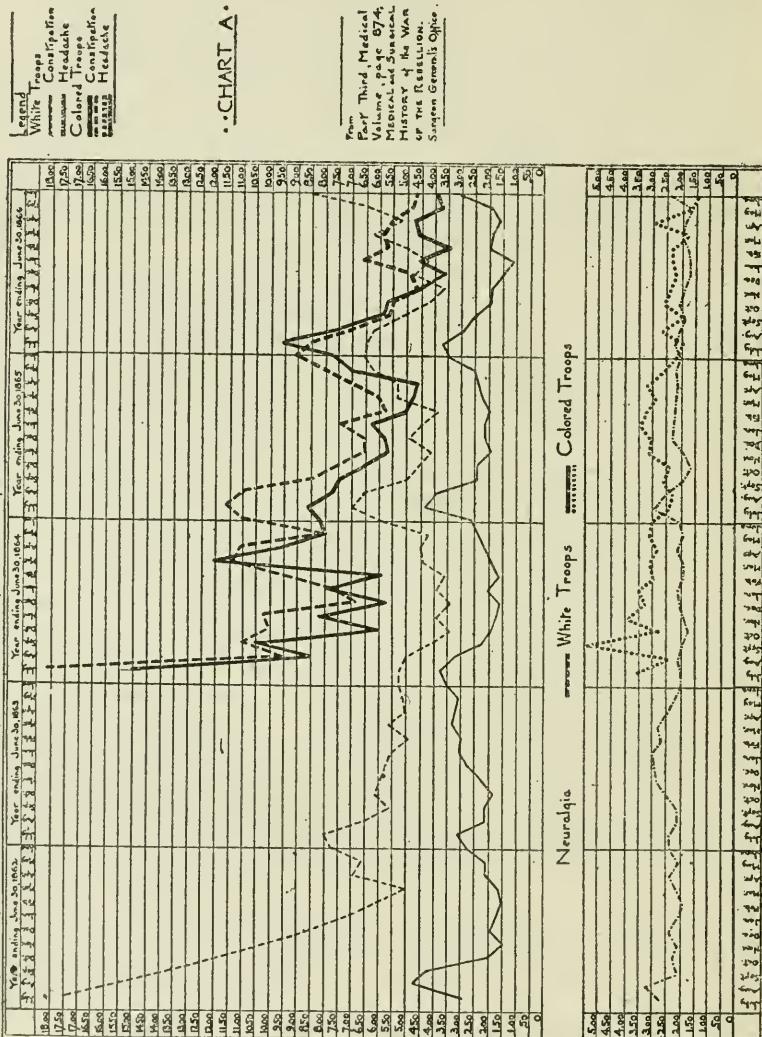
<sup>8,9</sup> Medical and Surgical History, War of the Rebellion, Third, Med. Vol., p. 874.

<sup>10</sup> Report of the Surgeon General, U. S. Army, 1917.

United States troops serving in China, the mean strength of all troops, including officers, being 1,369, the admission rate for enlisted men with constipation was 83.15 for 1915, and 27.25 for 1916.

In the Greeley Arctic Expedition it was not an uncommon occurrence for the men to suffer from complete exhaustion for two or three days after a bowel movement. General Greeley lost one of his best men in

Chart Showing Prevalence of Constipation, Headache and Neuralgia. War of the Rebellion. Monthly Rates per Thousand Strength White and Colored Troops



the death of Rice.<sup>11</sup> The effort required to get a bowel easement cost him his life.

"Tied-up" bowels in men in the fighting line is not an uncommon condition. Constipation makes an uncounted number of men non-effectives. Not infrequently men are brought to the operating table needlessly had their bowel-needs been given timely attention and proper treatment. With the Japanese forces in the field, in the Russo-Japanese War, the ratio of constipation to the thousand mean strength was 0.07.<sup>12</sup> Appendicitis is a rare occurrence with Japanese troops. Their troops in the field had a low ratio of noneffectives from disease. At the time of the Boxer Rebellion Japanese soldiers were able to march cheerfully 15 miles to every 10 miles covered by the American troops on the way to Pekin. The medical and sanitary officers of the Japanese Army have proven that the normal condition of the soldier is health, and that those who fall should fall on the firing line and not by the wayside from disease.

In 1917 the mean strength, in enlisted men—American troops, of the U. S. Army—was 639,645.<sup>13</sup> Excluding injuries, venereal diseases, alcoholism and vaccinia there were 480,789 admissions to sick report; and the constantly noneffective totaled 11,832.73, with an in-hospital total of 10,074.43. The ratio per thousand of mean strength of admission to sick report was 751.65; the noneffective ratio was 18.50.

Diseases of the digestive system were the cause of admission to sick report for 56,478 enlisted men (American troops). There were 6,997 admissions with diseases of the stomach (ulcer and cancer excepted); 101 with intestinal obstruction; and 31,470 for other diseases of the intestines;<sup>14</sup> 6,394 enlisted men were admitted for appendicitis, 4,535 for hemorrhoids, and 5,622 for hernia. The ratio per thousand of mean strength for admissions for diseases of the digestive system was 88.30. Including hemorrhoids, 61,013 admissions were for disease of the digestive tract.

The total number of days lost—total noneffectives—for enlisted men admitted to sick report with diseases of the digestive system was 453,840. From diseases of the stomach (ulcer and cancer excepted) 38,188 days were lost, from intestinal obstruction 1,825 days, and from other diseases of the intestines 129,743 days.<sup>14</sup> Appendicitis caused the

<sup>11</sup> Rice died at Cap Isabella in the second attempt to reach a cache of meat.

<sup>12</sup> Medical History of the Russo-Japanese War, Imperial Government. (The writer of this paper made painstaking and diligent search, and persistent inquiry, to find a ratio of constipation in the U. S. Army. Nowhere could he find any data or statistics on this subject, save that to which reference is made in the foot-notes.)

<sup>13</sup> Report of the Surgeon General, U. S. Army, 1918.

<sup>14</sup> Numbers 105, 110, International Classification.

loss of 119,190 days, hemorrhoids of 43,343 days, and hernia of 113,830 days; 2,145 cases of uncomplicated hemorrhoids went under operation.<sup>15</sup>

Of the 204 causes of admission to sick report from disease, under the International Classification, five were the causes of admission to sick report of 55,018 enlisted men (American troops) of the U. S. Army in the calendar year of 1917. These five causes are diseases of the stomach, other diseases of the intestines, appendicitis, hemorrhoids, and hernia. The total admissions to sick report for all diseases for enlisted men (American troops) in 1917 were 563,644.

It is the duty of the medical officer to know the health condition of every man in his organization. He is both accountable and responsible, on his part, for the up-keep of the command to its highest level of effectiveness—of keeping every man fit and ready to carry the peak load whenever necessity demands it. The duties of the medical force center on protection from disease. Timely measures taken to correct minor disorders of the digestive functions protect the health of the soldiers and prevent the development of the more serious conditions.

With 453,840 days lost<sup>16</sup> to the Army in one year, in 1917, by enlisted men (American troops), from admission to sick report for disease of the digestive system comes a call for inquiry, for wider knowledge as to the causes which underlie this large loss of man-power.

Digestion is a chain of events. It is a complex process, but not, of necessity, a difficult one when there is concurrent physiological action of every part and function. For the process of alimentation to carry through, it is indispensable that the entire alimentary tract should be in a natural working condition. When a condition develops which causes a failure of action in any part of the nutritive functions, when any part of the work of digestion is not being done normally, search should be made for the cause; and an effort should be organized to accomplish its control. The regular evacuation of the body waste is just as important as the feeding of the body. No less pains should be taken to maintain regular, natural habit in one case than in the other. "If a watch loses time because it needs a cleaning, we do not seek a remedy in drugs, but in its cleaning, *better adjustment* and good care." In a word, habitual constipation is an indication of disordered digestion. It is a contributing cause to disease of the digestive system. Not infrequently it is the first step over the threshold into established disease.

It is claimed, by good authority, that the physician who knows when

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<sup>15</sup> In the Texas Militia Mobilization, August, 1917, 370 men, or 2.73 per cent, were reported with hemorrhoids as primary defects; 163 as secondary defects; and 19 men were discharged by reason of these conditions. *THE MILITARY SURGEON*, July, 1918, p. 60.

<sup>16</sup> Equivalent to 1,243.39 years.

to employ a cathartic has mastered an important lesson in therapeutics. There is scarcely anything the proper use of which is more important than a real cathartic; the more irritant, the more violent the action, the worse the reaction. "Qui bene purgat, bene curat," is better not taken too seriously. Best is it to take seriously, "Don't expect to cure chronic constipation by drugs." Cathartics are frequently a cause of constipation.<sup>17</sup> Sluggish habits of the bowels are encouraged by laxatives, even by those which have the mildest action. After active catharsis, and particularly when such drastic measures are needless, the violent reaction puts a severe and burdensome tax upon the whole process of alimentation and anabolism. Physiological balance is restored with difficulty. The academic treatment of constipation has been conventionalized. It does not adjust the autonomic system back to the norm. The physiological divisions of the body that have the essential functions of assimilation, conservation, distribution and regulation of the expenditure of energies and the elimination of waste products, work as one autonomic apparatus.<sup>18</sup>

To give routine treatment, and without discrimination, to all cases of constipation alike, treatment which may aggravate or prolong the condition is not the fulfilment of the medical officer's duty. To relieve only for the time being the condition which is the cause of the sick report does not return the man to line of duty as a dependable effective. The handling of constipation in the Army is academic and conventionalized. "C.C." pills and salts are dispensed by army surgeons without consideration for the man or his ailment; they are prescribed for all manner of minor ailments. Here and there is a medical officer who recognizes both the importance of constipation and its proper treatment. Doubtless, knowledge gained through his own personal experiences has brought to him an appreciation of the physiological division of labor in the work of the digestive system, and that time, energy, man-power and expense are not saved when needlessly violent treatment is used.

By no means is it uncommon for the enlisted man to provide himself with his favorite laxative and use it as his body-needs may indicate. He does not use it always with discretion. In the event of his being unable to use his own remedy, oftentimes he will try to pull through his day's work with his discomforts and headache rather than to report his condition. Not always is the man who reports for constipation a slacker. The conscientious man does not care to invite that suspicion. When he can no longer postpone relief, he reports his condition and

<sup>17</sup> Gant, S. G., "Constipation, Obstipation and Intestinal Stasis."

<sup>18</sup> Kempf, E. J., "The Autonomic Functions and the Personality," 1918, p. 3.

receives regulation treatment; and, not infrequently, he is still ineffective.<sup>19</sup>

"Half the unhappiness in the world proceeds from little stoppages." The man who does not have his natural morning easement begins the day unready, more or less dissatisfied, and, not infrequently, unwilling to carry through his day's work. Many a bad temper is due to this simple fact. His circulation laboring to carry the burden of the toxic load, which a clogged intestinal canal is imposing upon it, brings him headache and malaise; and, oftentimes, he is cold, and has a general feeling of discomfort. In civil life these may not count for much. At any rate he can take his favorite laxative if he so desires. In the Army it counts for a great deal. Human behavior of the soldier is not essentially different from that of the civilian, but it is seen at closer focus. The aggregate of the condition and behavior of each man makes the morale of the organization. Army morale is built up on the tenets of physiology and psychology; it has to start from something. Physical well-being and body-comfort is the genesis of morale. The part that physiology has in morale-making is not a negligible one.

## II

There are five outstanding factors which make for better adjustment—better conditioning. These, working together, release the digestive organs from burdens which they cannot carry without bringing disorder into the process and results of nutrition.

In the natural order the first of these is giving sufficient time to the first step in digestion—mastication. One of the strongest arguments against hasty eating is that the stay of the food in the mouth, by stimulating the sense of taste, evokes the secretion of the gastric juice and promotes normal stomach activity. It is common knowledge that all food should be chewed thoroughly; it is an essential mechanical and chemical factor of digestion.

Secondly, water in generous quantity, must be taken into the body every day in order to maintain the physiological balance. It keeps the internal system clean. Maximum health is possible only when all the organs of the body maintain their normal water content—when their water-needs are fully met. Claim for the discovery of water as "the greatest medicine" nature provides has been made by the samurai, the little athletic knights of old Japan. These remarkable men of the jiu-jitsu knew its usefulness and value; they made practical use of

<sup>19</sup> At a sick call a sizable pitcher full of salts, and one glass stood on the surgeon's table. The pitcher was emptied by the men who reported; and each man, who was given salts, in turn drank from the one and unwashed glass.

their knowledge. In every twenty-four hours they drank a considerable quantity of water which was cool enough to be agreeable to the taste, and pure. The amount of water taken daily by the disciples of jiu-jitsu reaches the gallon mark. Constipation is not common in Japan in civil life or in the army. Whenever a Japanese finds a slight illness coming on, he does not go to a doctor. He eats sparingly and drinks water in generous quantity. A noteworthy fact is that Japanese troops are proof, in all kinds of weather, against rheumatism.<sup>1</sup> They attribute their immunity to this disease to the very free use of water internally and externally. In the Philippines, at the time of the Spanish-American War, pure water freely and persistently drunk for a few days mitigated intestinal disorders. The intestines and every part of the digestive system were benefited greatly. Water is the most important of the inorganic constituents of the body; it is indispensable, without exception, to all the body tissues and fluids. Ninety-nine per cent of the saliva, 80 per cent of the blood, and 75 per cent of the muscles is water. The elasticity, pliability and consistency of the muscles are, to a large extent, conditioned by the amount of water they contain. There are 115 pounds (52.5 kilograms) of water in the body of a man weighing 165 pounds (75 kilograms).<sup>2</sup> A water ration of at least two quarts per man per day is needed to satisfy the ordinary physiologic demands of the body.

Food is the third factor. Nothing touches the soldier's life, at every point, so closely as does the army ration. Beginning with ancient times, great stress has been laid on the effects of different kinds of food; some relaxed, others constipated the bowels; some were more readily digested than others. The United States garrison ration, as laid down by regulations, provides 4,632 calories per man per day. With certain substitutions made to this ration the "modified" garrison ration, so called, provides 4,809 calories. Surveys made in training camps show the average consumption to be a little less than 4,000 calories. On this diet, supplemented by food purchased from camp exchanges, men gained in weight on an average throughout the Army about 9 pounds per man since entering the training camps. Some organizations show an average gain of 20 pounds, others of only 2 or 3 pounds.<sup>3</sup> The

<sup>1</sup> Rheumatism is comparatively unknown among the two younger generations. Only the oldest people are afflicted with it. Even among the aged rheumatism does not occur with sufficient frequency to create dread of it by the grandfathers.

<sup>2</sup> Violent exercise for one hour causes a loss in weight of one-half a pound; two glasses (8 ounces) of water taken restores the lost weight.

<sup>3</sup> Major J. R. Murlin: "Some Problems of Nutrition in the Army." *Science*, Vol. xlvi, No. 1221, May 24, 1918.

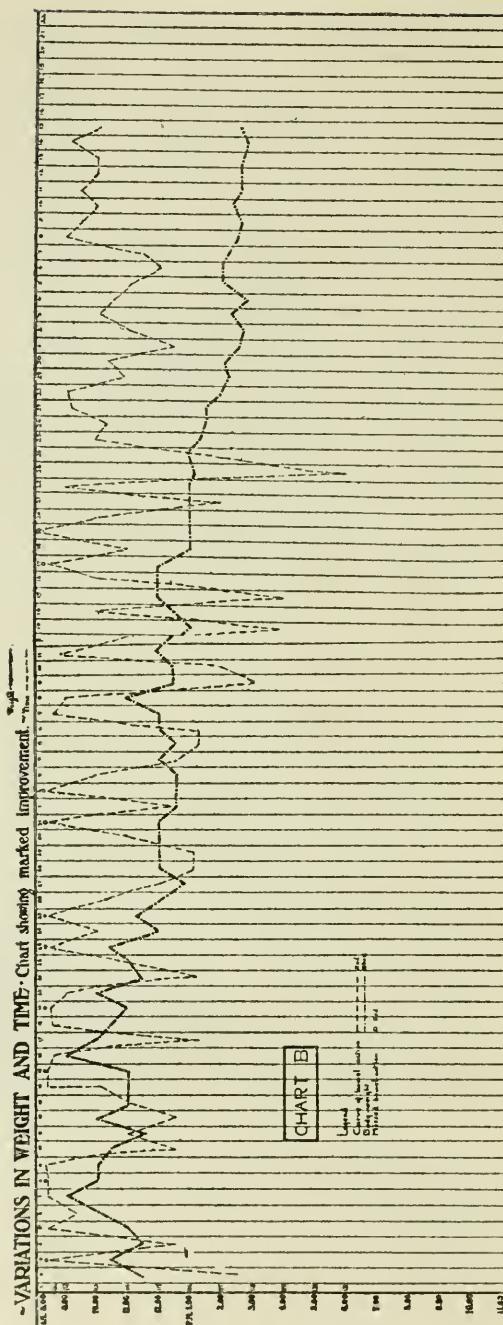


Chart B shows the variations in weight with missed bowel action. The zero marks (0) at the top of the chart indicate no bowel movement for that day. The dotted broken (---) line indicates the daily weight, showing the gain in weight as the daily bowel action improved. This is the chart of No. 3, Detachment B. This improvement came by habit training; No. 3 had only two laxative tablets.

average gain, as estimated in four camps, is  $7\frac{1}{2}$  pounds in three months.<sup>4</sup> An intensive study of the enlisted men in three army organizations discovered that the men who had chronic constipation registered a loss in weight; and, too, that by reestablishing physiologic colon conditions—natural and regular bowel action—the weight turned to a steady increase.<sup>5</sup>

A ration so thoroughly adjusted to the needs of the Army would lead, it would seem, to more uniform results. It would be interesting to know what relation, if any, influence of station or of arms of service have to the undetermined causation of the wide range in weight gains. Food which is satisfactory in kind and sufficient in quantity is provided in the army ration. Its energy value is sufficient for the maximum measure of work. This is the theoretical requirement of energy necessary to enable a soldier of average weight to march 30 miles in ten hours carrying a pack and other equipment weighing 44 pounds. If a soldier does not do this maximum amount of work, the fuel energy accumulates in his body in the form of fat, and his muscles hypertrophy. Considerable gain in weight is a result.

Closest study is given to the suitability of the ration; to provide mess which makes for effectiveness and satisfactory nutrition, and with reference to the relation of diet to specific muscular energy. Many are the aspects of the problem of nutrition for the Army: the important factor of the relation of diet to disease; variety as a factor of safety in escaping the danger of a lack of some essential to nutritive well-being; and bulk and roughage, their balance and amount. Success or failure of the army ration is registered in the working health and effectiveness of the soldier. The health of the Army is the business conjointly of the nutrition officer and the medical officer.

The fourth factor is exercise. In importance it stands in the front rank with the others. Exercise favors peristalsis. Training and camp life bring to the soldier exercise in plenty, both in kind and intensity. With easier stress the work of drill, marches and action rests upon the man who has quick and enduring energy of body; and the burden of excessive fatigue weighs him down less heavily if he does not fail his morning evacuation.<sup>6</sup>

<sup>4</sup> Report of the Surgeon General, U. S. Army, 1918.

<sup>5</sup> Part III of this paper is the report (with charts and tables) of this study.

<sup>6</sup> The morning evacuation is considered, in the East, a *sine qua non* of health; and Anglo-Indians are unanimous in their opinion of the "bari-fajar" (as they pronounce the dawn-clearance). The natives of India, Hindus (pagans) and Hindis (Moslems), unlike Europeans, accustom themselves to evacuate twice a day, evening as well as morning. This may, perhaps, partly account for their mildness and effeminacy, for "C'est la constipation qui rend l'homme rigoureux." The English, since the first invasion of cholera in October, 1831, are a different race from their costive grandparents, who could not dine without a "dinner pill." Curious to say, the clyster is almost unknown to the people of Hindustan, although the barbarous West Africans use it daily to "wash 'um belly," as the Bonney-men say; and, as Sonnini notes, to propose the process in Egypt under the Beys might have cost a Frankish physician his life." (Sir Richard Burton: Arabian Nights, Denver edition, Vol. III, footnote to p. 242.)

If any single one of these five postulates holds first rank it is this, the fifth, habit. This and the first are, as a rule, within the control of the man himself to regulate. In the Army the other three are subject to regulation other than his own; he has to accept them as they are. Responsibility for their eventuating is not his. But that is not true of habit; the responsibility is wholly his. Habit is an extremely important factor with regard to the fulfilment of every function in digestion. We eat more by habit than by appetite. Practically the times and the amount of eating are chiefly matters of habit. Hunger recurs at the intervals to which we are accustomed. Habit stands in exactly the same relation to the bowel-needs of the body; it is the decisive factor; it is the motivating incentive to bowel easement, easing the load which the surcharged colon cannot carry safely. The state of readiness is a state of neediness. Disregard of the defecatory act through neglect, postponement or repression puts a snub—drag back—on the completion of the process of digestion.<sup>7</sup> The distending stimulus loses its effectiveness, continued absorption of the fluid content harden the feces, and the toxic by-products suffuse the system, causing a recession of energy and endurance, lowering resistance to disease and infection, and delimiting the effectiveness of the soldier and man-power. These toxins are not energetic products. Missed and irregular bowel action make low-powered, substandard men.<sup>8</sup>

Why is habit so important a factor in the correction of constipation? It is physiological. Only through its establishment comes certain and regularly working action, and nothing else can be depended upon to secure and maintain permanent results. One should not be content to remain moored to the laxative habit, for as long as drugs are relied upon as substitutes, a natural, autonomic and vital part of the process of digestion fails. "If it were known," said Oliver Wendell Holmes, "that a prize fighter were to have a drastic purgative administered two or three days before a contest, no one will question that it would affect the betting on his side unfavorably."

### III

Three organizations in the U. S. Army were under my observation in the working out of a method for determining as exactly as possible their health status in general, and, in particular, to correct and prevent chronic constipation by habit formation. New-time methods and instruments of warfare demand that the soldiery should be in the

<sup>7</sup> The feeling that one must defecate but cannot, shows distress and inability to become interested in anything else.

<sup>8</sup> This statement bears repeating. "Fear God, and keep your bowels open," is the earnest exhortation of a well-known physiologist.

prime of physical condition. Men who are well conditioned stand up the best against every hazard; they succumb to war shock rarely; they do not break down physically and mentally from the stress of forced and intensive training in camps and cantonments. They are dependable on every occasion and for all demands; they are not the noneffectives. In hasty mobilization it is impossible to reject, or cull out from the aggregate, large numbers of men belonging to the type with neurotic or psychopathic constitutions. These men, and *many others*, become more or less constant noneffectives, and a burden and expense to the Army, unless they can be saved to the service.

A method to be usable must be practical, simple and time-saving both in its operation and results. The pressure of training leaves no unused time; its demands require practically all the time there is. By which token the method must fit into the organized plan, and it must be carried through without making too great demands upon the medical officer of the organization. Besides, it must bring satisfactory results.

First, I find out the men in the organization who are habitually constipated, and how long they have been in that condition. This quest discovers to the medical officer much other information which is useful, facts which may be advantageous mutually, both to himself and to the men. To the group of men who need habit training the method is explained simply and precisely; and to each man is given, in an envelope, a card<sup>1</sup> on which he is to record every day the exact time of his bowel movement. Missed bowel action is recorded with a zero mark. Both the envelope and the card carry the enlisted man's

No.	Name	Date
Hour		
Weight		
Hour		
Weight		
Hour		
Weight		
Hour		
Weight		

<sup>1</sup> Card for 8 weeks record. Hour indicates the time of the day at which the bowels move. The body weight should be taken at the *same time* every day.

name, and the number assigned him. Included in the envelope are brief printed instructions.

A brief, simply stated and definitive talk on the five outstanding factors, which make for better conditioning, supplements the explanation of the method for habit training. Training begins at once. In no event is a man to take a laxative. In fact, he is not to take medicine of any kind. Every time he fails to have a daily easement he reports to me, and if I think he needs it I give him a laxative. But in no case does a man get a laxative when he is not in absolute need of it. If the cause of his failure rests with him, I refuse to give him medicine, so as to give point to the fact that the success of any undertaking to secure for him relief depends upon his conscientious coöperation and personal effort. The man with whom there is a natural order of events reports to me at stated times for the checking up of his record.

There is a choice to be made in the laxative used in habit training. A violent cathartic of the "bludgeon" or "dynamite pill" type would, undoubtedly, fail to secure the best results. The compound cathartic pill is of varying resistance to solution and disintegration. With the solubility test it is sometimes twenty-four hours before these pills are dissolved. Salts merely increase the fluid bulk of the bowel contents without having much effect on peristalsis. Cascara sagrada stimulates peristalsis, and the fluid extract could be used with success, without doubt. In the Army spastic constipation is not uncommon, and as a result of stress, worry or excessive fatigue. For this condition violent and depleting cathartics, with their drastic purging, are undesirable remedies.

The laxative used with the A and B detachments was a tablet containing hyoscyamus. In the solubility test this tablet dissolves completely in twenty minutes in water at body temperature. For many years hyoscyamus has been known to modify the effect of a cathartic, and to be preferable to belladonna. One tablet was effective; it was always "twice alike," as free as possible from griping, not excessive in action, and with no disagreeable side effects. Without exception this laxative worked satisfactorily. It brought the desired result comfortably, and complete and easy relief came in about ten hours after being taken. It did not take the man from his duties. Occasionally two tablets may be required for men of certain habit, and whose bowel condition is obstinately chronic.

Immediately habit training begins, the men seek the latrine at a regular, stated time.<sup>2</sup> After a few trials a responsive state of readiness

<sup>2</sup> The bowels are more readily emptied after meals, and preferably after the morning meal. With sufficient accumulation of the solid material at the sigmoid flexure, strong peristaltic contractions move the mass on into the rectum, and this gives the desire to empty the bowels.

comes, and the bowel-need is satisfied without straining, or strongly forced effort, and in brief time. No anxiety or discomfort is carried through the day. When the habit is established much time is saved, and in many ways. Many, if not most, of the men in the organizations which came under my close observation had never had any definitive instructions upon the personal equation in relation to their bowel-needs. They knew little or nothing about natural habit. All of them knew the laxative habit. With but few exceptions the men in the three organizations straightway took keen interest in the undertaking and gave to it ready and unstinted coöperation. This method proved, in practice, that is it an aid to the medical officer in the health upkeep of the enlisted men, and that it reinforces the effectiveness and morale of the organization.

#### DETACHMENT A

This organization began habit training on June 28, 1918. On that date there were 150 enlisted men enrolled. Seventy-one of these men, 47.33 per cent, were habitually constipated. This condition had existed from one to twelve and more years. The average duration was four years. Fifty-seven men were enrolled in the training group, fourteen of them having received transfer orders.

#### *Summation of Condition and Progress*

<i>Number</i>	<i>Years constipated</i>	<i>Result of training</i>
1	Always.....	September 25, 1918. No medicine taken. "Bowels now regular."
2	3 years.....	August 14, 1918. No medicine taken. "Thinks of it every morning, and goes." Transferred to A. E. F.
3	2 years .....	September 25, 1918. No medicine taken. Improved.
4	1 year .....	August 14, 1918. No medicine taken. Improved. Transferred to A. E. F.
5	2 years.....	August 10, 1918. No medicine taken. "More regular than at any time in the past five years."
6	6 years.....	Constant noneffective; no desire to try for improvement.
7	4 years.....	August 27, 1918. Satisfied with his condition. "No better."
8	2 years.....	August 14, 1918. No medicine taken. Transferred to A. E. F. September 2, 1918 (by letter): "My bowels move regularly every morning; and I think I can keep the habit."

<i>Number</i>	<i>Years constipated</i>	<i>Result of training</i>
9	2 years.....	August 14, 1918. No medicine taken. Improved. Transferred.
10	6 years.....	August 14, 1918. Medicine 3 times: July 2, 8, 28. "Bowels regular now; they never used to be. Sometimes I went one week without a movement." Transferred to A. E. F.
11	6 years.....	August 27, 1918. Medicine once: July 1. "Bowels are more regular now; they move every morning. I feel whole lots better. It was well worth while."
12	8 years.....	September 2, 1918. No medicine taken. Regular bowel action. Gained in weight.
13	3 years.....	August 14, 1918. Medicine once: July 2. "At 8 every morning a good bowel action, which I did not have before." Transferred to A. E. F.
14	5 years.....	August 14, 1918. Medicine 3 times; July 15, Aug. 5, 9. Regular action every morning, which he never had before. Transferred to A. E. F.
15	7 years.....	An illiterate; mentally deficient.
16	3 years.....	August 14, 1918. Medicine twice: July 11, 16. Improvement. Transferred to A. E. F.
17	5 years.....	August 27, 1918. No medicine taken. Improvement.
18	3 years.....	August 14, 1918. No medicine taken. "The first thing I think of in the morning." Transferred to A. E. F.
19	3 years.....	No desire to improve his condition.
20	3 years.....	August 27, 1918. No medicine taken. Improvement.
21	10 years.....	August 13, 1918. Medicine twice: July 14, Aug. 11. "A fellow can move his bowels if he wants to; he can make it a habit."
22	3 years.....	August 27, 1918. Medicine once: July 31. Improvement.
23	4 years.....	August 27, 1918. Medicine once: July 3. Incomplete record. Limited improvement.
24	12 years.....	September 17, 1918. No medicine taken. Improvement. Gained in weight.
25	2 years.....	August 27, 1918. No medicine taken. Improvement.
26	6 years.....	August 27, 1918. No medicine taken. Improvement.

Number	Years constipated	Result of training
27	1 year.....	July 17, 1918. Admitted to hospital; venereal disease. Laxative 3 times before admission.
28	3 years.....	August 27, 1918. No medicine given. Limited improvement.
29	5 years.....	October 30, 1918. Medicine 5 times: July 5, 13, 20, Aug. 5, 7. Admitted to hospital; appendicitis. Operation.
30	4 years.....	September 24, 1918. No medicine taken. Improvement. "No headaches now. Bowels move every morning. Habit is better than medicine. It did me lots of good."
31	Always.....	August 27, 1918. Manifested no desire to try bettering his condition.
32	4 years.....	August 27, 1918. Medicine 8 times: July 5, 10, 16, 23, 31; Aug. 9, 11, 19. Pyorrhea alveolaris. "Sorry teeth; no better."
33	1 year.....	August 14, 1918. Medicine once: July 29. "I feel better every way." Transferred to A. E. F.
34	4 years.....	August 27, 1918. No medicine taken. Improvement.
35	6 years.....	August 27, 1918. No medicine taken. Improvement.
36	5 years.....	August 27, 1918. Medicine 6 times: July 20, 26; Aug. 2, 7, 14, 16. Improvement.
37	6 years.....	September 25, 1918. No medicine taken. Improvement. Steady gain in weight.
38	2 years.....	August 27, 1918. Condition unchanged. An illiterate.
39	6 years.....	This man kept no record.
40	5 years.....	September 15, 1918. Medicine 3 times: July 5, 13, 18. On July 23 reported a loss in weight of 17½ lbs. in past 10 weeks. Bismuth gastro-intestinal X-ray taken; admitted to hospital; operation for appendicitis. In 1910 operated on for hernia; in 1915 for hemorrhoids.
41	3 years.....	September 25, 1918. No medicine taken. "I have no headaches now; my bowels act regularly. I have never taken anything since I started (June 28). It is well worth while." Steady gain in weight.

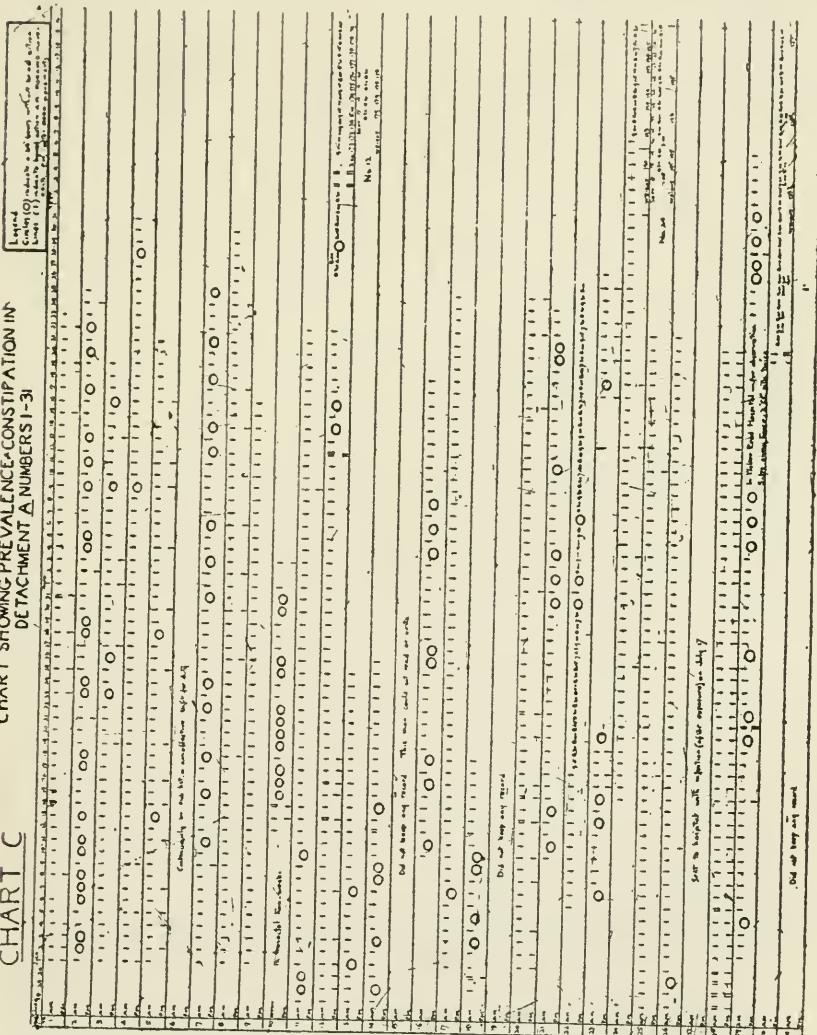
<i>Number</i>	<i>Years constipated</i>	<i>Result of training</i>
42	8 years	August 27, 1918. No medicine taken. Improvement.
43	2 years.....	Transferred.
44	3 years	Transferred.
45	3 years.....	August 27, 1918. No medicine taken. Limited improvement.
46	3 years.....	August 27, 1918. Medicine 3 times: July 16, 19, 23. "Feel lot better; did me a lot of good."
47	7 years.....	August 27, 1918. No medicine taken. Improvement.
48	4 years.....	August 14, 1918. Medicine once: July 8. Improvement. Transferred to A. E. F.
49	3 years.....	Satisfied with his condition.
50	3 years.....	August 27, 1918. Medicine once: July 8. "I never have any more trouble; every day I think of it, and go regularly. I am cured. I used to like physic, but habit is better."
51	7 years.....	Transferred. Sick in quarters and hospital often.
52	4 years.....	August 14, 1918. Medicine twice: July 15, 22. Began habit training July 15: bowels were in bad condition, having been eight days with only three movements. Reports much improvement. Needs dental attention. Transferred to A. E. F.
53	2 years.....	August 27, 1918. Medicine once: July 16. Improvement.
54	4 years.....	August 14, 1918. Medicine once: July 23. Began habit training July 15. "Now when I get up I want to go for my movement." Transferred to A. E. F.
55	4 years.....	July 24, 1918. No medicine taken. Began habit plan July 11. "I had been buying bowel medicine. Now I am doing well."
	3 years.....	August 27, 1918. Medicine twice: July 26, 31. Began habit plan July 18. Improvement. September 25: "Bowels all right."
57	4 years.....	September 25, 1918. Medicine twice: July 25, Aug. 8. Improvement.

The absolute number of men who carried through the training was forty-seven, ten men having been taken from the group by transfer, or

for cause as stated in the summation. From June 28 to September 1, 1918, twenty-four of these men had no laxative; they had no medicine of any kind. Twenty-three of the men took a laxative:

- |                       |                                          |
|-----------------------|------------------------------------------|
| No. 6 had 1 tablet.   | No. 22 had castor oil once.              |
| No. 10 had 3 tablets. | No. 23 had 1 tablet.                     |
| No. 11 had 1 tablet.  | No. 27 had 3 tablets.                    |
| No. 13 had 1 tablet.  | No. 29 had 5 tablets.                    |
| No. 14 had 3 tablets. | No. 32 had 8 tablets.                    |
| No. 16 had 2 tablets. | No. 33 had 1 tablet.                     |
| No. 21 had 2 tablets. | No. 36 had 4 tablets and 2 half tablets. |

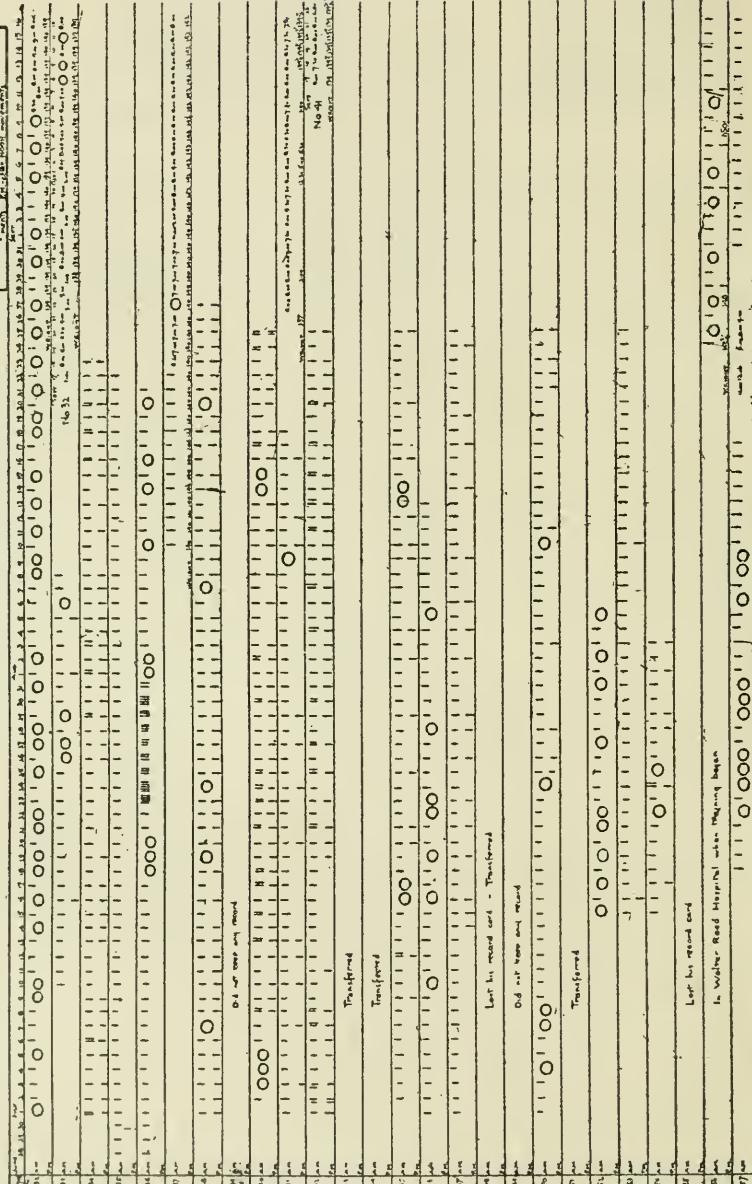
CHART C  
DETACHMENT A NUMBERS 1-31  
CHART SHOWING PREVALENCE CONSTIPATION IN



No. 40 had 3 tablets.  
No. 46 had 3 tablets.  
No. 48 had 1 tablet.  
No. 50 had 1 tablet.  
No. 52 had 2 tablets.

No. 53 had 1 tablet.  
No. 54 had 1 tablet.  
No. 56 had 2 tablets  
No. 57 had 2 tablets.

CHART D  
CHART SHOWING PREVALENCE OF CONSTIPATION IN  
DETACHMENT A, NUMBERS 32-57



During this period of two months a laxative was given fifty-four times. The mean strength, in enlisted men, of this command was 150. Markedly improved bowel condition, and a distinct and acknowledged gain in general health came to 39, or 82.97 per cent of the men. Of these men 22, or 56.41 per cent had no laxative. Limited improvement was made by 5 men. There was no record for 3 men; they were transferred. No gain was made with 10 men. These were Numbers 6, 7, 15, 19, 29, 31, 32, 38, 40, 49.

The food of this organization was generally poor, and frequently very poor. It failed in quantity, quality and variety; and bulk or roughage did not figure in the enlisted men's mess. Very many of the men needed dental attention, and badly. Colonel Logan, Chief of the Dental Division of the U. S. Army, assigned Major Mitchell to the organization as dental surgeon, and the much-needed dental work was thoroughly done.

This was the first practical test of my method for correcting constipation by habit-formation. It was new work; and it was tried out on the organization which was ready at hand.<sup>3</sup> Gratifying results were brought to record. There was distinct gain in the general health-condition of the organization, and the morale advanced to a higher level.

Charts C and D show the prevalence of constipation in this organization. They also show the daily condition and record of the men who were in the habit training group. The zero marks point out the days of missed bowel action. These seen in the aggregate give a clearer idea of the sum-total of this condition in the organization.

#### DETACHMENT B

Habit training began on July 24, 1918, with Detachment B. It was undertaken at the request of the commanding officer of the organization. The strength of the command, in enlisted men, at that time was 62. In the preliminary survey 47 men, or 75.80 per cent, were discovered who had habitual constipation. All the new men assigned to this unit for duty reported to me, the medical officer. Those who needed better conditioning were straightway taken in hand.

Thirty-three of the 47 men had no laxative; they had no medicine. Fourteen men were given a laxative:

No. 2 had 3½ tablets, July 24, 26, 29, each one; July 31, one-half.

No. 3 had 2 tablets, July 25, 29, each one.

No. 4 had 1½ tablets, July 24, one; August 6, one-half.

No. 8 had 1 tablet, August 1, one.

No. 19 had 1½ tablets, July 24, one; 27, castor oil; August 22, one-half.

<sup>3</sup> I wish to express my appreciation of Col. Pearce Bailey's open-minded interest in this work; and also my appreciation of the opportunity, which he created, of making a practical test of the method. I also acknowledge the hearty and responsive cooperation given this work by its many friends, both officers and men.

- No. 20 had 1 tablet, July 29, one.  
No. 22 had 5½ tablets, July 25, 29, 31, August 1, each one; August 6, 14, each one-half.  
No. 23 had 1 tablet, August 6, one.  
No. 26 had 1 tablet, July 25, one.  
No. 29 had 3½ tablets, July 25, 29, 31, each one; August 2, one-half.  
No. 30, had 1 tablet, July 24, one.  
No. 34 had 1 tablet, July 25, one.  
No. 35 had 1 tablet, August 6, one.  
No. 36 had ½ tablet, August 22, one-half.  
A laxative was given twenty-six times.

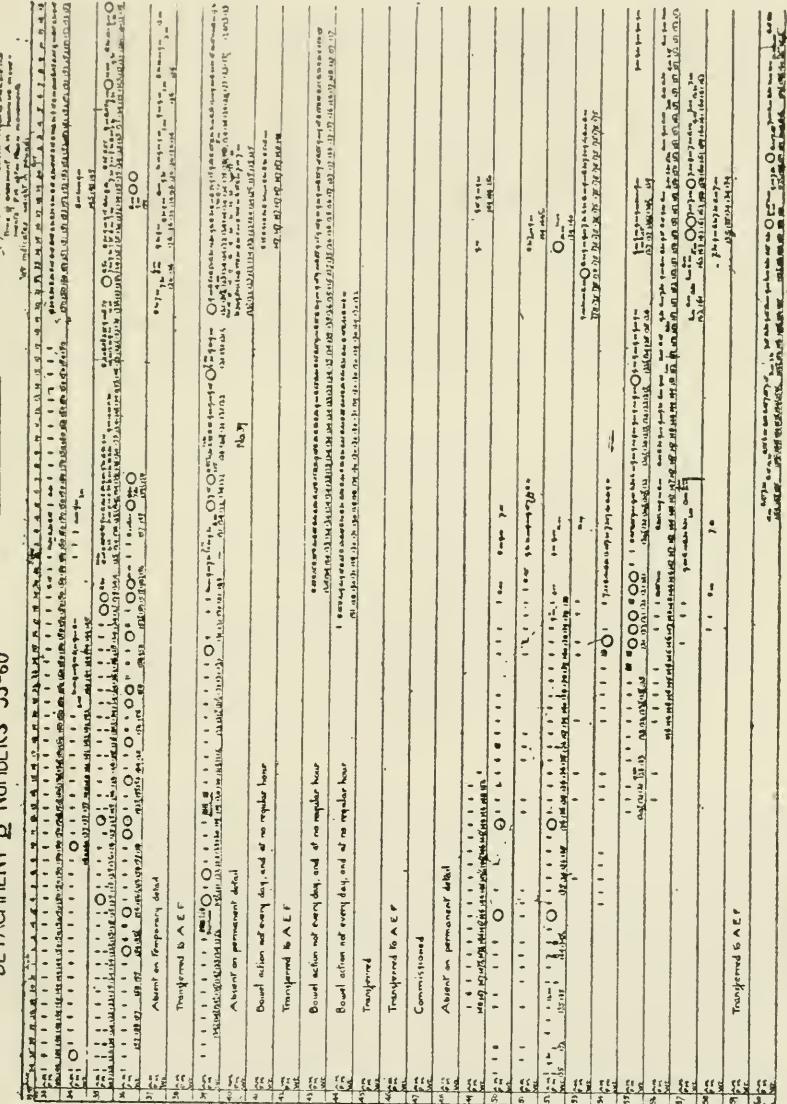
A laxative was given twenty-six times.

CHART B  
CHART SHOWING PREVALENCE OF CONSTIPATION IN  
DOCUMENTS NUMBERS 22

Charts E and F show the prevalence of constipation in Detachment B. On these charts the exact time of the bowel movement is recorded. Zero marks indicate missed bowel action. The daily weight is also recorded. These weights were taken at the same time every day, and on the same scales.

With Detachment A there were indications that, along with the

CHART F  
SHOWING PREVALENCE OF CONSTIPATION IN  
DETACHMENT B NUMBERS 33-60



improvement of the bowel function, came a stabilization and gain in the body weight. In Detachment B this lead was followed up. Army regulation of clothing eliminates one inconstant factor (variability in the weight of clothes) in tabulating a series of weights. Such a series loses its intrinsic value if the weight is not taken at the same hour every day.<sup>4</sup> All the factors for reliability were strictly observed in this weight series. The results obtained added corroborative evidence.

The sick report for August (1918) of this organization shows a clean health record. Private D and Number 61 had been constant non-effectives over a considerable period of time. Number 9 was sick in quarters when habit training began. He was unfit for duty, and he was admitted to the hospital. There the diagnosis was "chronic constipation." On August 12 he was discharged from the hospital, and sent back to his organization for duty.<sup>5</sup> Immediately he began habit training, and, without the use of any laxative, habit was established. His weight (148 pounds) steadily increased, and in September, when he was transferred to another organization, he weighed 156 pounds. A noticeable increase in his physical and mental alertness appeared, and the acne on his body and face disappeared. Number 23, in the September sick report, was admitted to hospital for an operation for hernia.

In October came the influenza epidemic. Of the 62 enlisted men who were in Detachment B in July (1918) 16 were noneffectives from the epidemic. Twelve of these men were sick in quarters with a light, uncomplicated form of the disease. Four men were admitted to the hospital—Numbers 7, 34, 41, 49.

Habit training brought two visible gains to this organization; an advance in the efficiency of the unit, individually and collectively; and an improvement in the spirit of the men. The physical condition of the command reached a higher level. Likewise the morale of the organization moved upwards. Drill, which had been desultory and

<sup>4</sup> There is a daily swing in the body-weight. The mean twenty-four hour variation is two and one-half ( $2\frac{1}{2}$ ) pounds. At noon, between 12 and 1, the weight is the lowest. In the evening, between 6 and 7, it is the highest. With breakfast taken, there is an increase in weight of one and a half to one and three-quarter pounds; this weight comes nearest the maximum daily weight, and sometimes it is the maximum. In a weight series of a normal, healthy man carried through 100 consecutive days the after-breakfast weight was the maximum twenty-four hour weight twenty-two times; five times both the 8 a. m. and the evening weights were the maximum. The evening weight alone was the maximum sixty-six times. On these same one hundred consecutive days the minimum weight was at noon, 12-1, seventy-five times. The only other hour which had the lowest weight, except rarely, was 7 a. m., with seven times in one hundred days. Six times both 7 a. m. and noon registered the minimum daily weight.

<sup>5</sup> Number 9 (Chart E, Detachment B). He was discharged "relieved"—and by the academic treatment. His record as charted (note the zeros) for the fourteen days immediately following his discharge shows his condition. He is a constitutional psychopath.

## DETACHMENT B

SICK REPORT FOR SIX MONTHS, JUNE, 1918, TO JANUARY, 1919

Strength of command	Hospital, days	Quarters, days	Strength of command	Hospital, days	Quarters, days
<b>62 Men</b>			October—Contin'd		
July:			No. 17.....		9
Private L.....		3	No. 62.....		14
Private D.....	31		No. 54.....		1
No. 61.....	10		No. 55.....		18
No. 9.....		6	No. 11.....		8
			No. 5.....		20
<b>67 Men</b>			No. 50.....		7
August:			No. 70.....		3
Private D.....	24		Private M 1.....		4
No. 61.....	20		Private S.....		
No. 9.....	12				
<b>65 Men</b>			<b>74 Men</b>		
September:			November:		
No. 53.....		2	No. 7.....	30	
No. 23.....	10		No. 49.....	2	
No. 54.....		1	No. 26.....		30
No. 11.....		1	No. 34.....	13	
			No. 19.....		4
			No. 21.....		15
			Private M 1.....		1
<b>66 Men</b>			<b>77 Men</b>		
October:			December:		
No. 7.....	24		No. 7.....	21	
No. 49.....		6	No. 62.....		2
No. 49.....	18		No. 26.....		15
No. 53.....		18	No. 21.....		15
No. 34.....		3	No. 39.....		2
No. 34.....	11		No. 24.....	6	
No. 13.....		2	No. 54.....	5	
No. 23.....	31		No. 54.....		5
No. 8.....		8	No. 70.....	8	
No. 19.....		18	No. 55.....		26
No. 21.....		7	Private M 2.....	6	
No. 44.....		3	Private W.....		2
No. 41.....		13			
No. 41.....	9				

slow, sometimes hopelessly so, took on new animation and life. An army officer, who had watched the men of this unit in their daily drill, remarked, one day in August, "They were the worst drilling squad in Washington. Now they drill like West Pointers."

The food of this organization was generally satisfactory. All the officers of the command coöperated heartily and fully to order the contributing factors for good conditioning. Many of the men needed dental care, and arrangements were made whereby these needs could be fulfilled. Twelve-minute talks, by well-known specialists, were given the men. These talks were upon important parts of the body, and the men were instructed how not to trespass upon insecure health.

Worth-while results are gained through simply stated, meaty and definitive talks on the care of the feet, mouth, eyes and body needs. These talks can be brief. They need take no time out of the soldier's working hours. They bring down the noneffective ratio.

## DETACHMENT D

The commanding officer of this organization, the Surgeon General's Office Detachment, requested habit-formation training for his men. Training began on September 18, 1918. At that time the strength of the command, in enlisted men, was 108. Chronic constipation was discovered in 75.50 per cent of these men.

An added feature, and used for the first time, was the Service Score Card. This record card was used for two reasons: First, to have a more complete individual record for reference, and an uniform method for physical ratings; second, to provide a joint record and rating by which both the medical officer and the line officer could measure the results of the training.

## SERVICE SCORE CARD

Organization:	Date:			Series:
Name:	Age:	Wt.	Ht.	No.
Rank:	Type:			
1. Eyes:	16. Military bearing:			
2. Ears:	17. Response to commands:			
3. Teeth:	18. Weakness:			
4. Chewing:	19. Personal qualities:			
5. Stomach:	General value:			
6. Bowels:				
7. Skin:				
8. Feet:				
9. Headache:				
10. Heart:				
11. Deviations from normal:				
12. Sick call:				
13. Hospital:				
14. Intelligence:				
15. Psychological tests:				
Remarks:				

Each of the 20 numbers is rated on a basis of 5, with 1 for the lowest, and 5 for the highest.

Twenty rating items are on this card, each item rated on a basis of 5, with 1 for the lowest, and 5 for the highest. The medical officer rates the man on the first fifteen items—those in the left-hand column. On the last five—16, 17, 18, 19, 20—the line officer rates the man. The entire twenty items, in the aggregate, rate on a scale of 100 points. Under Psychological Tests (15) the rating of the psychological officer is recorded. Under Type is recorded the type of the man according as he belongs to the carnivorous or herbivorous group.<sup>6</sup> The man and the job: will they fit each other? How is one to tell? The expert generally knows at a glance; his judgment is based on experience. Type provides another key, should experience be scanty.

Schooling	No. of years	Graduated		Age at end	Principal civil occupation:	
		Yes	No		Years engaged in it:	
(a) Lower.....					Birthplace:	
(b) High.....					Married:	Children:
(c) College.....					Enlisted:	Drafted:
(d) Night.....					Home Address:	
(e) Trade or Business...					State:	City:
(f) Technical or Professional					No.:	Street:
<b>RATING</b>						
Physical	Intelligence	Personal qualities	Gen. value	Improvement	Total	Date
Time under observation: _____ Signed by _____, Rating Officer.						
_____						
Time under observation: _____ Signed by _____, Rating Officer.						
_____						

Improvement is included under rating on the back of the card. Provision is also made for separate ratings by the medical officer and the line officer.

Another new feature, which was introduced with the Detachment

<sup>6</sup>Sometimes called "narrow-backs" and "broad-backs," respectively. John Bryant, M.D., *Boston Medical and Surgical Journal*, 1915, clxxii, p. 321, and clxxiii, p. 384. Joel E. Goldthwait, M.D., *Boston Medical and Surgical Journal*, 1915, clxxii, p. 881.

## DETACHMENT D

CHART SHOWING THE PRINCIPAL PHYSICAL DEFECTS, ENLISTED MEN, Nos. 1-50,  
SEPTEMBER, 1918

No.	Eyes	Ears	Teeth	Mastication	Stomach	Defecation	Skin	Feet	Sick report	Hos-pital
1.....	—	—	—	3	—	—	4	—	4	—
2.....	—	—	—	—	—	4	—	—	—	—
3.....	3	—	—	3	—	2	—	—	—	—
4.....	—	—	—	3	—	—	4	—	—	—
5.....	—	—	—	3	4	4	—	—	—	—
6.....	—	—	—	3	—	3	4	—	—	—
7.....	—	—	—	3	—	—	4	—	—	—
8.....	—	—	—	3	4	2	—	—	—	—
9.....	—	—	—	—	—	4	—	—	—	—
10.....	—	—	—	4	3	2	4	—	—	—
11.....	—	—	—	3	3	2	4	—	4	—
12.....	4	—	4	2	3	2	4	—	4	3
13.....	3	—	4	3	4	3	3	—	—	—
14.....	—	3	—	—	—	4	4	—	—	—
15.....	—	—	1	2	2	2	2	—	—	—
16.....	3	—	4	3	—	4	4	4	—	—
17.....	4	—	3	3	—	4	4	4	—	—
18.....	—	—	4	3	—	—	—	—	—	3
19.....	4	—	3	3	—	—	—	—	—	—
20.....	4	—	4	3	—	4	—	4	—	—
21.....	4	—	4	3	—	—	3	—	—	—
22.....	—	—	3	3	3	3	—	3	—	2
23.....	—	—	4	3	4	4	4	4	—	—
24.....	3	—	3	4	—	—	3	3	—	—
25.....	3	—	3	3	3	3	4	3	4	1
26.....	4	4	—	—	—	3	3	4	4	—
27.....	—	—	—	3	3	3	—	4	—	1
28.....	—	—	4	—	—	4	—	3	—	—
29.....	—	—	—	3	4	4	3	3	—	—
30.....	3	—	4	3	—	—	2	—	—	—
31.....	—	—	—	4	4	3	3	3	4	—
32.....	3	—	4	3	3	1	2	3	3	4
33.....	4	—	—	4	—	—	3	3	—	—
34.....	4	—	4	3	—	—	2	3	—	—
35.....	3	—	4	3	—	4	4	4	—	—
36.....	—	—	4	3	—	—	4	4	4	—
37.....	3	—	3	4	4	1	4	3	—	—
38.....	3	—	4	—	—	—	—	4	—	—
39.....	3	—	1	2	3	3	3	3	4	—
40.....	3	—	4	4	—	4	—	3	4	—
41.....	—	—	3	4	—	—	4	4	—	—
42.....	—	—	3	—	—	—	4	4	4	—
43.....	4	—	4	4	—	—	3	4	3	3
44.....	3	3	4	—	—	—	3	3	—	—
45.....	3	—	3	3	—	—	3	4	4	—
46.....	4	—	3	4	3	3	3	—	4	—
47.....	—	—	3	4	—	3	3	4	4	—
48.....	—	—	4	3	4	3	3	3	3	—
49.....	—	2	4	4	—	3	3	3	—	—
50.....	—	—	3	3	3	2	3	2	—	—

## CHART G

Rating for each item is on a basis of 5, with 1 as the lowest, and 5 as the highest.  
The spaces with a line — indicate a rating of 5 for that item.

D, was the use of bran as a laxative. This change was made so as to test its merits. The daily weight of the men of this organization was recorded. Food and living conditions of Detachments B and D, were identically the same. Complete records of 86 enlisted men were assembled on Service Score Cards, and these men were given ratings. Charts G and H show the principal physical deficiencies, as worked out from the records, and also the ratings on these defects.

## DETACHMENT D

CHART SHOWING THE PRINCIPAL PHYSICAL DEFECTS, ENLISTED MEN, Nos. 51-86,  
SEPTEMBER, 1918

No.	Eyes	Ears	Teeth	Mastication	Stomach	Defecation	Skin	Feet	Sick report	Hos-pital
51.....	2	—	4	3	—	—	3	3	4	—
52.....	—	—	2	2	4	—	3	4	—	—
53.....	3	—	2	3	3	3	3	3	—	—
54.....	3	—	3	3	—	—	3	3	4	—
55.....	3	—	3	4	—	—	4	3	—	—
56.....	3	—	—	3	—	3	4	—	—	3
57.....	—	—	2	2	3	2	3	4	4	—
58.....	3	—	4	4	—	—	4	—	—	—
59.....	3	—	—	3	—	4	2	3	—	—
60.....	3	—	3	3	4	4	3	4	—	—
61.....	—	3	—	3	—	3	3	3	3	—
62.....	—	3	3	3	—	4	4	4	—	—
63.....	3	3	4	—	4	4	3	3	—	—
64.....	4	—	4	3	—	—	3	3	—	—
65.....	—	—	3	4	—	4	3	4	—	3
66.....	—	—	4	4	—	4	2	4	—	—
67.....	—	3	—	—	3	4	4	4	—	—
68.....	—	2	3	3	—	4	—	3	—	—
69.....	4	—	—	—	—	3	4	4	—	—
70.....	3	—	3	3	—	—	3	3	—	—
71.....	3	—	2	4	2	2	3	3	—	2
72.....	—	—	—	3	3	2	3	3	—	—
73.....	4	—	—	4	—	4	4	3	—	—
74.....	—	—	4	4	3	2	4	3	—	—
75.....	3	—	3	4	—	2	3	4	4	—
76.....	3	—	4	3	—	—	3	4	—	—
77.....	4	—	2	—	1	4	2	—	—	—
78.....	3	—	—	4	—	4	4	3	3	—
79.....	—	—	—	3	3	2	2	2	2	3
80.....	—	—	4	3	3	2	2	2	—	—
81.....	3	—	4	4	4	1	3	—	—	—
82.....	—	—	3	2	2	2	4	4	3	—
83.....	—	—	3	3	—	3	4	3	2	3
84.....	—	—	—	4	—	3	3	2	—	3
85.....	—	—	3	3	—	4	—	3	—	3
86.....	4	—	—	3	—	1	3	4	3	3

## CHART H

Rating for each item is on a basis of 5, with 1 as the lowest and 5 as the highest.  
The spaces with a line — indicate a rating of 5 for that item.

An interesting and noteworthy feature, which grew out of the work with this organization, and likewise with Detachment B, was the genuine interest and coöperation of the men in the undertaking. Training of Detachment D was quickly organized, and directly it was well under way, emergency orders came for me to report immediately to Camp Meade for duty in the influenza epidemic. During my absence of a month these men carried on the training, and on my return a hundred and more of the men met me with their daily records faithfully recorded on their cards. This fact is interesting in that it tells, with no uncertain emphasis, the genuine appreciation the enlisted men have for good-conditioning. With better conditioning came good care, upon their own part, of the men themselves. Again, an emergency order sent me to another camp. The men continued with their training and

#### DETACHMENT D

MEN ON SICK REPORT DURING THE PERIOD, SEPTEMBER 16 TO DECEMBER 1, 1918

Strength of command	Hospital, days	Quarters, days	Duty, days	Strength of command	Hospital, days	Quarters, days	Duty, days
108 men				October—Con.			
September:				No. 69.			6
No. 16.			3	No. 68.			1
No. 54.			1	No. 71.			2
No. 61.			1	No. 46.			4
No. 51.		2		No. 40.			2
No. 78.			3	No. 64.		1	
No. 75.			1	No. 82.			1
No. 7.			1	Private G1.			1
No. 8.			1	Private G2.			1
No. 63.			1	Private H.		1	
No. 11.		1	3	Private P.			1
No. 1.		1		Private T.			1
No. 13.			2				
No. 57.			2	119 men			
No. 69.			7	November:			
No. 68.			2	No. 16.			2
No. 71.	6			No. 54.			1
Private K.	7			No. 78.		1	3
Private L.	15			No. 62.			1
Private M.			1	No. 55.			1
111 men				No. 7.			4
October:				No. 1.		1	1
No. 2.			2	No. 69.			10
No. 73.		1	1	No. 12.			
No. 56.		1	1	No. 74.			3
No. 43.			2	No. 80.			1
No. 48.			1	No. 39.			3
No. 42.			2	No. 71.			1
No. 16.			1	No. 81.			3
No. 17.			1	No. 62.			1
No. 61.			2	No. 25.			1
No. 29.			1	No. 52.			1
No. 51.			1	No. 64.			1
No. 78.		1	1	No. 56.			1
No. 62.		1		Private F.			1
No. 83.			1	Private G.			1
No. 7.			2	Private H.			3
No. 15.		2	3	Private K.			2
No. 8.			1	Private M1.		1	
No. 11.			2	Private M2.			1
No. 66.			2	Private M3.			1
No. 86.		1		Private P.		1	
				Private T.			1

daily records. While I was on duty in camp the armistice came, and my active service ended.

With the sudden ending of this work came regrets. A re-rating of Detachment D, as planned with the service card, would have shown interesting results. The only authentic record of the physical condition of this organization, after the training period, is the sick report.

This report is for the months of the influenza epidemic, and it shows that the total number of days lost from sickness for the months of October and November was relatively small. It would be of interest to know exactly what part, if any, the better conditioning of the men had in protection against disease. At Camp Meade, in October, in a convalescent ward of Evacuation Hospital No. 38, of 75 men who had been admitted to the base hospital for broncho-pneumonia following influenza, a large number were chronically constipated; and 26 per cent had that condition habitually, in obstinate form.

#### CONCLUSION

Constipation is a functional disorder. It can be corrected; it is preventable. A two-fold benefit comes through health-constructive work; existing conditions of imperfect health are corrected; and, perforce, foundation is laid for their prevention. There are certain events in the daily life of the soldier which, in their observance or in the breach, have a part in determining his well-being. In helping him to discover these "key points," and profit by their observance, a common service is done the man and his organization—and the Army.



## SPUTUM-BORNE DISEASE TRANSMISSION WITH EPIDEMIOLOGIC AND BACTERIOLOGIC RESEARCH

BY LIEUT. COLONEL JAMES G. CUMMING

*Medical Corps, United States Army*

(With five illustrations)

OF THE camps at the Port of Embarkation, Newport News, Va., Camp Alexander was unique in that, over a considerable period of time, there was an opportunity to make a comparative study of the influence of eating utensil sanitation on the incidence of the sputum-borne diseases. In the early days of the port the camp consisted of draftees from nearby sections of the country, but later it became an important mobilization and embarkation camp for colored stevedore and labor organizations recruited at the southern camps. As the number of colored troops arriving at the port increased (a comparatively high percentage were, owing to disabilities—chief of which was venereal infection—found unfit for overseas service), it became necessary to segregate the unfit into units.

*Reserve Labor Battalions.*—These unfit units were designated reserve labor battalions. All the men composing these battalions were given appropriate medical treatment. Some were cured and rendered fit for overseas service, others were fit for home service only, while a third class was discharged. These reserve battalions accomplished the necessary labor at the port. Their strength varied within narrow limits, because the discharges were equalized by transfers from other organizations. As nearly as could be determined there was a "turn over" in the personnel of the reserve labor battalions every eight weeks. Some men remained under treatment or observation for a longer period, others for a shorter period, but the average stay in the organization for each man was approximately eight weeks. The mean strength of the reserve organizations for the period of the investigation (ten months) was 3,115.

*Stevedore Regiments.*—In addition to the reserve labor battalions there were also in this camp stevedore regiments. In contrast to the reserve organizations these stevedore units were made up entirely of men physically fit for overseas service. They were recruited at the southern camps and had already received some training before they were mobilized into overseas regiments at the port. Each stevedore regiment remained at the port approximately five weeks and received further preparation and outfitting for overseas service. The mean strength of these stevedore organizations for the period of the investigation was 2,856 men.

CHART IV. SERIES G.

## MEASLES CASES PER 1000 TROOPS

RESERVE LAB. BN. STEVEDORE REGIMENT

MESS KITS WASHED  
-- WITH ~

BOILING WATER STRENGTH MONTH

315 CASES MARCH

0 APRIL

0 MAY

0 JUNE

0 JULY

0 AUGUST

5 SEPTEMBER

5 OCTOBER

1 NOVEMBER

6 DECEMBER

15 TOTAL CASES

CAMP ALEXANDER

P. O. E., N. N. V.A.

97

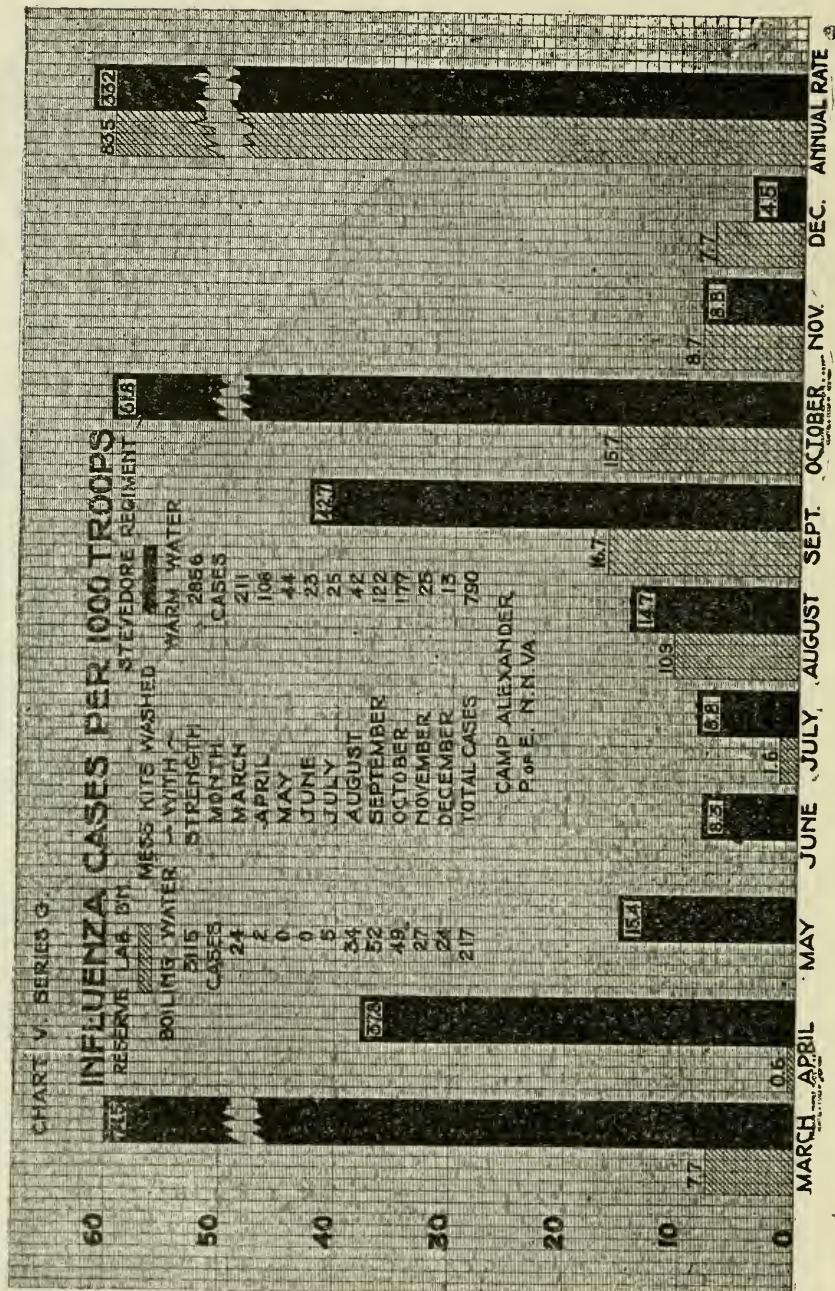
WASH

228

WASH

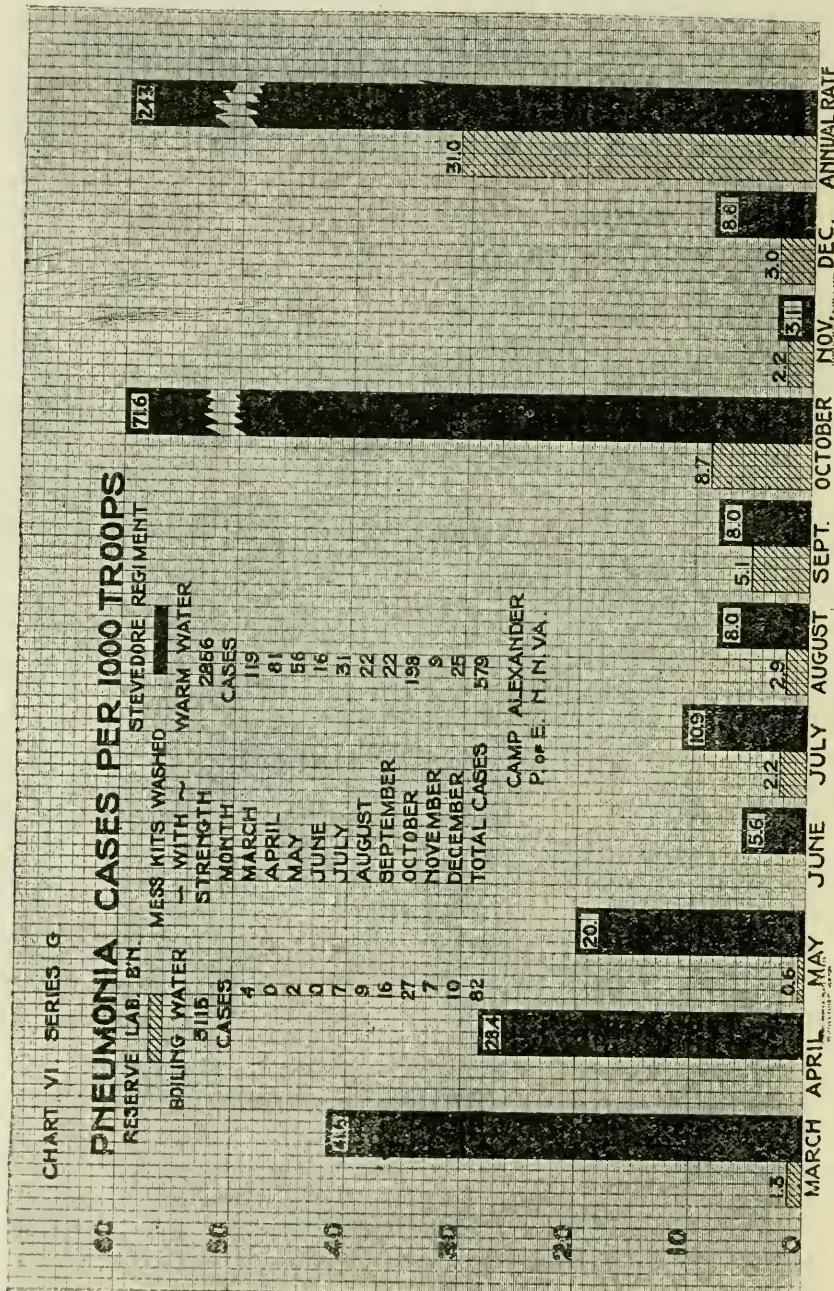
58

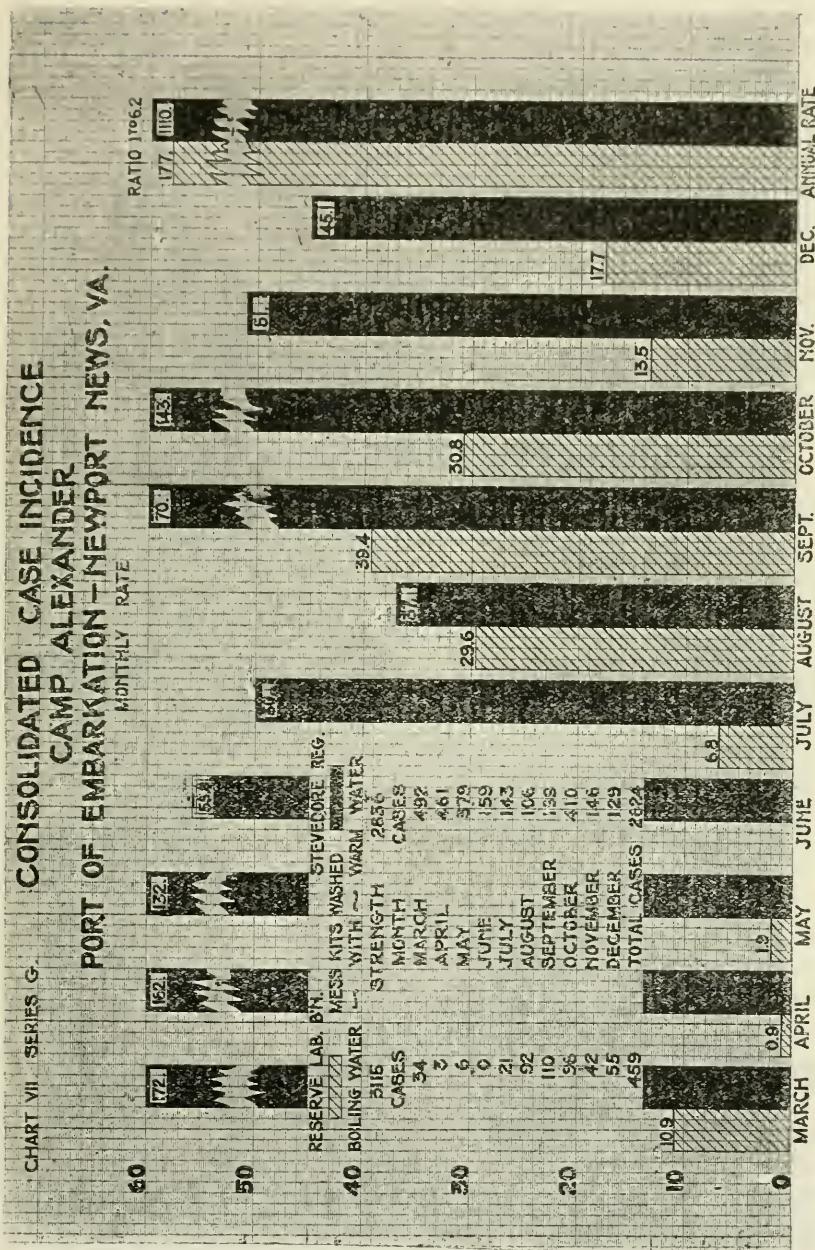
	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT.	OCTOBER	NOV.	DEC.	ANNUAL RATE
16.4	0	17	17	1.7	0.3	1.7	0.3	1.7	0.3	1.9	1.9



*Comparison of Reserve Labor and Stevedore Organizations.*—In considering these two organizations, a liberal comparison is made so that, in making a study of the morbidity and mortality records here presented, the full data may be taken into account. The mean strengths of the two organizations were similar: the reserve labor battalion 3,115, and the stevedore regiment 2,856. From month to month these strengths varied within narrow limits. In the reserve labor battalions there was an average "turn over" in the organization every eight weeks, while in the stevedore regiment this replacement was every fifth week. Both organizations were under the same line and medical supervision; both had a common source of commissary and quartermaster supplies. There was a common water supply. Throughout the entire camp the shelter was of tentage, five men to each tent. All tents were heated. Each company in the camp had its own mess hall and lavatory of standard construction. The prevailing weather conditions were the same for both groups. In neither organization was there undue fatigue at any time. Passes were limited for all men in camp; consequently the possibility of introducing infection from extra-cantonment areas was the same for both groups. With the exception of officers the camp was composed entirely of colored troops.

So far as the foregoing points are concerned it would appear that both organizations in the camp lived under similar if not identical conditions. There are, however, two points of difference between these organizations: First, the reserve labor battalions were composed of men physically unfit for overseas service. Those troops were riddled with venereal disease; there were frequent cases of tuberculosis, rheumatism, ununited fractures, etc., all of which would, presumably, render this group more susceptible to the camp infections. The stevedore regiments, on the other hand, were composed of troops physically fit for stevedore work, which requires strength, endurance, and freeness from acute or chronic infections. Which of these organizations had the higher disease incidence? That one composed of men already suffering from chronic infections and other physical defects, or the one composed of physically fit men? This question will be decided in a subsequent discussion. Second, incinerators were constructed at each mess hall in that part of the camp set aside for the reserve labor battalions. These incinerators were installed during February, 1918, and presented a means of providing boiling water for mess-kit washing. Three galvanized iron cans were placed on each incinerator. One can contained soapy water and the other two clear rinse water. In addition to combustible camp waste, there was an adequate supply of wood for each incinerator. Although no attempt was, at any time, made to have the water actually boiling at every meal, it is believed





from occasional observation that a high temperature was usually maintained. In contrast to these reserve battalions, which washed their mess kits in water which was placed over fire, it is to be pointed out that the stevedore regiments washed their mess-kits by the old-line method. The only method of providing hot water in that part of the camp occupied by the stevedores was by the kitchen range, which had an attachment to a hot-water boiler. This water was never above 60° C., and when, in field basins, it was placed on the ground, it rapidly cooled. Consequently the average temperature of the water at the time of washing mess kits was 45° C.

In former reports we have pointed out that there is a difference in the infectious disease incidence between organizations using tableware and those using mess kits,<sup>1</sup> as well as between civil and institutional populations which use either machine or hand-washed eating utensils.<sup>2</sup>

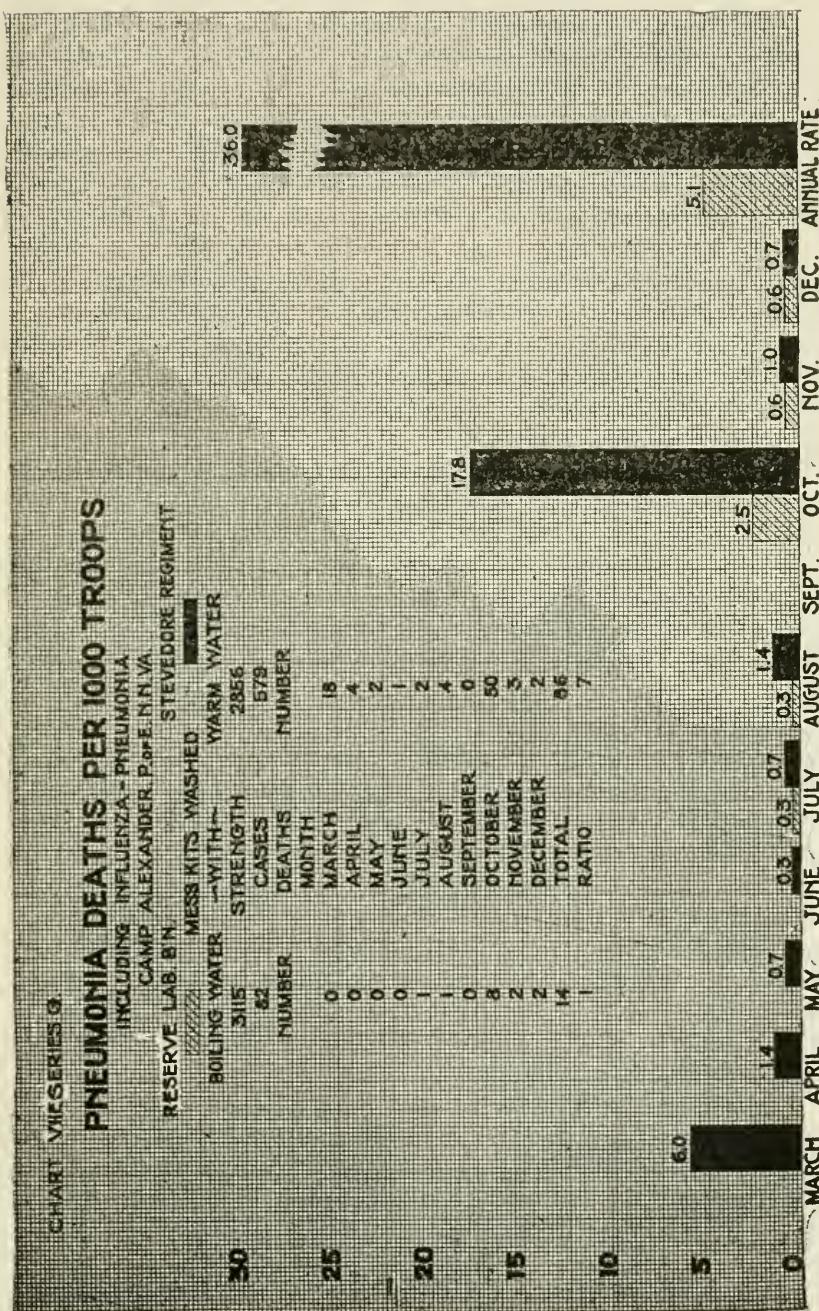
In this report, however, attention is directed to the fact that here we have a unique comparison of two organizations, both of which used mess kits. From the sanitary viewpoint there was but one outstanding difference between the two groups. The reserve labor battalion used mess-kit wash water which was at or near the boiling point, while the stevedore regiments used only warm water.

On this basis of sanitary mess-kit washing the following morbidity and mortality charts are presented. These give the case rates by month per 1,000 troops for a period of ten months, as well as the annual rate for each disease. All the sputum-borne infections occurring in the camp are included in the charts. It will be noted that, on an annual basis per 1,000, troops, the ratio of cases for each disease in the protected group (reserve labor battalion), and in the unprotected group, (stevedore regiments) is for meningitis 1 to 28, diphtheria 1 to 2, mumps 1 to 8, measles 1 to 17, influenza, 1 to 4, and pneumonia 1 to 8. In Chart VII the consolidated case incidence, for all the above infections, shows that there were six times more cases in the unprotected than in the protected group; or, expressing it differently, 85 per cent of the cases occurred in the unprotected group. (The less important charts have been omitted.)<sup>3</sup>

<sup>1</sup> Lynch and Cumming: "The Transmission of Influenza by Indirect Contact—Hands and Eating Utensils." *Am. Jour. Pub. Health*, January, 1919.

<sup>2</sup> Cumming: "Influenza—Pneumonia as Influenced by Dish Washing in 370 Public Institutions." In press. *Am. Jour. Pub. Health*.

<sup>3</sup> Attention has been called to the fact that nothing has been said here respecting the relative immunity of the two groups in question. It is true that on the average the soldiers of the reserve labor battalions had a little longer service than those of the stevedore regiments. This certainly did not exceed ninety days on the average. Intentionally, the maximum number of days is given, as an overstatement seems desirable rather than to arouse the possibility of criticism through not giving due weight to all modifying factors. Supposing the ninety days longer service of the reserve labor battalions is admitted. This doubtless would somewhat lessen the very wide differences shown by the figures in the paragraph to which this foot-note refers, but it is not conceivable that these differences would be anywhere nearly wiped out.



Now, then, one might ask whether or not there could not have been a reduction in the case incidence in the unprotected group similar to that in the protected group had similar sanitary precautions been taken in both groups? In answer to this question the report speaks for itself. In my opinion in the Army the insanitary method of washing mess-kits has been the major avenue of distribution of the sputum-borne infections. An intensification of corrective sanitary measures bearing directly on this major avenue of transmission, as well as the avenue through inanimate objects and hand-to-mouth distribution, will accomplish results by the prevention of the sputum-borne diseases equally striking to those results already accomplished through definite sanitary precautions in the control of the intestinal-borne infections. The intelligent application and enforcement of the principles of asepsis of eating utensils and of hands will render the military service as safe to life as any civil community.

In fact it may be predicted that in a well-organized and disciplined army of the future, with coöperation on the part of line officers and medical officers, the death rate from disease will be lower in the Army than in the civil population. This has not been so in the past, but the Army will have the opportunity during the next influenza epidemic to demonstrate to municipal health officers the value of asepsis of eating utensils and of hands, as a means of control of this sputum-borne infection. At that time the Army will have been trained; those in the city will be untrained in these precautions, and when the epidemic occurs it will be too late. It may be of interest to state that, as a result of the influenza epidemic, among a group of 9,000 troops protected to a degree against unsanitary eating utensils, the mortality was only 2 per 1,000 troops; whereas in the average civil population this mortality was 5 per 1,000, and for all troops in the United States 14 per 1,000.

I will not enter into a further discussion of this wide difference in the mortalities of these several groups at this time, but suffice it to say that there will not be a diminution in the mortality from the sputum-borne diseases until the popular demand for aseptic eating utensils in public places, as well as in the Army, is as urgent as is the present demand for a safe water supply.

Chart VIII is of interest in that it shows, for the period of the investigation, the pneumonia death rate for the two groups at Camp Alexander. It is of further interest since 94 per cent of the total deaths were either primary or secondary pneumonias. Virus infections were not immediate causes of death, but these paved the way for the fatal secondary pneumonias. In addition to pneumonia the only cause of death from disease was meningitis, there being eight fatal cases in the

unprotected group. The striking point in this chart is that there were seven times more deaths in the unprotected than in the protected group; or, to express the death rates in a different form, it is found that 88 per cent of the total deaths occurred in that group where no attempt was made to block that major avenue of transmission through mess-kit wash water. If formerly we had had as full information as to the importance of this avenue of distribution, it would have been possible to have reduced the mortality in the unprotected to that of the protected group.

The pneumonia producing group of organisms is, then, the chief cause of death among troops, and in the civil population one of the chief causes of death. This group of organisms is not as highly infectious, as is, for instance, influenza or measles virus. Furthermore, these organisms have a seasonal prevalence of distributions, and if, as has been the case in the Army, the avenues of transmission are not blocked, they become widely disseminated and prevail chiefly in the tonsils of healthy carriers. This wide prevalence does not manifest itself immediately but lies dormant until the occurrence of a virus infection.

The pneumonia organism with which we become infected today does not kill tomorrow, but it lies in wait as a potential danger and is able to kill only when the opportunity arises to combine its own forces with that of a virus infection.

As is shown in the chart here presented, the aseptic washing of eating utensils among troops, this applies to the civil population as well—will accomplish marked results in preventing the pneumonia carrier state.<sup>4</sup> Furthermore, by the practice of this sanitary precaution not only are the pneumonias prevented, but there is also an automatic control of the virus and other sputum-borne infections.

Chart IX (omitted) is a consolidation of pneumonia cases, case fatalities and deaths; 31 cases occurred in Reserve Labor Battalions and 243 in the Stevedore Regiment, a ratio of 1 to 8. In contrast to the ratio of cases, attention is directed to the fact that this ratio tends to reverse itself in the case fatalities, which were 200 in the Reserve Labor Battalions to 173 in the Stevedore Regiment, a ratio of 1.5 to 1. Here again we have this remarkable phenomenon of a greater case fatality rate in the protected than in the unprotected group. The theory of this repeated finding has been set forth in a previous report. The mortality rate per 1,000 troops for the two groups was in a ratio of 1 to 7 or 88 per cent of the total deaths occurred in the unprotected group.

<sup>4</sup> Cumming and Spruit: "The Transmission of the Pneumonia Group of Organisms." In press. *Jour. Inf. Dis.*

If we turn our attention to the good accomplished in the protected group, through the single sanitary measure here dwelt upon, it is found that among 3,115 soldiers<sup>4</sup> there was an annual saving in the hospital care of 659 patients in addition to the saving of 95 lives. This record can be duplicated in other camps, and in the future it can be improved. In this connection the medical officer is almost entirely responsible, and it would be of interest to note the result attained if the present general method of efficiency rating of these officers were in part replaced by a system dependent upon the sick rate among troops under their control. Just as the intestinal-borne disease incidence is an index of the safety of the water supply and of the carrier rate in any municipality, so also is the sputum-borne disease incidence an index of the asepsis of eating utensils and of the carrier rate in any municipality or command. On the basis of aseptic mess-kit washing the epidemiologic evidence here presented may be regarded as ample proof of the importance of this sanitary detail.

In previous reports the deductions, as to the importance of this detail, have been based entirely on field investigations and morbidity records. In order, however, to further support our theory as to the avenue of transmission of the sputum-borne infections, through unsanitary mess-kit washing, there is here presented additional evidence of an experimental nature.

It may be well to outline briefly this theory of contagion transmission. In unrecognized as well as recognized cases of the sputum-borne infections, the oral cavity is the reservoir of the infectious virus. From here the infection is distributed through different routes, chiefly through the contamination of those objects which most frequently come in contact with it. Chief of these objects are eating utensils and hands. Compared to these, other objects, as well as air, are of minor importance. We have previously reported that organisms common to any particular individual's oral cavity are also common to that individual's hands.<sup>5</sup> Likewise the soldier's mess-kit is contaminated with the particular species common to his own oral cavity. So then, should a soldier harbor an infection, acute or chronic, his mess-kit and his hands are contaminated with this particular infection. At the mess, when warm water was used, his mess-kit and his hands were washed, for his hands were frequently used as mops.

The infection was, then, transferred from the mouth to the warm water by two routes—the mess-kits and the hands. Mild, unrecognized cases of the virus infections, and acute and chronic carriers of the poten-

<sup>4</sup> Cumming and Spruit: "The Transmission of the Pneumonia Producing Group of Organisms." In press. *Jour. Inf. Dis.*

tially dangerous infections, especially hemolytic streptococcus carriers, contaminated the mess-kit wash water three times a day, as long as they harbored their infection. This mess-kit wash water having an optimum temperature and being a liquid medium, readily passed on the infection to others. What are the avenues of travel of the infection from the contaminated wash water to the mouth of the newly infected individual? Here again, as in the case of the carrier, the non-immune individual immerses his hands as well as his mess-kit in the wash water. These are both liable to contamination, and they are both introduced into the oral cavity, where they deposit the newly acquired infection. This completes the five link chain of transmission: (1) Oral cavity of infected to (2) hands and (2A) mess-kits to (3) wash water to (4) hands and (4A) mess-kits to (5) oral cavity of newly infected.

Attention may be called to the fact that the wash water serves in the place of intermediate inanimate objects in the case of the single link chain or indirect hand-to-mouth avenue of transmission. The single link chain is common to civilians and soldiers alike, but in the Army the third and fourth links are double links, thereby doubling the possibility of transmission. Civilians are exposed chiefly through two routes—hands and eating utensils. Their hands may become contaminated through inanimate objects which are handled by many people, but not by that source—mess-kit wash water—common to all soldiers; and the contaminated hands of the civilian enter his mouth just as is the case among soldiers. Eating utensils are the most common source of distribution among civilians. These utensils are partially washed in only warm water, they are not rendered asptic, and there is an exchange of these at each meal. With this exchange of utensils there is an exchange of mouth organisms. As in the laboratory the platinum loop is used to transfer a culture from one test tube of medium to another, so also the unboiled eating utensil transfers infectious as well as non-infectious organisms from one individual to another. In contrast to this exchange of utensils among civilians, the soldier uses his own mess gear, but his hands, as well as his mess gear, become contaminated by the use of the common wash water. These double links among troops are the most prolific sources of infection, and these in conjunction with the third link, which is liquid and common to all soldiers, make for facility of transmission. These multiple avenues were peculiar to the Army and they alone explain the high sputum-borne disease incidence and the explosiveness of these epidemic diseases among troops where the asepsis of mess-kit washing was faulty. On the other hand, it must not be overlooked that, as shown in the charts, it is possible in the Army, to maintain, by the boiling of mess gear, a lower sick rate and mor-

tality rate than is found in the average civilian population. For the influenza-pneumonia epidemic the mortality in our protected group was less than one-half that of the average city.

In order to prove the above theory, which was based purely on observations of the technique of mess-kit washing, and determinations of the bacterial counts of wash waters, numerous laboratory experiments were carried out, at the port laboratory, Newport News, Va., by the author and Capt. J. W. Cox, M. C., U. S. A. The preliminary experiments in the series will be covered by a brief statement only, and three final transmission experiments will be given in detail.

As a preliminary it was first proved by spraying the throat, mouth and lips with a suspension of *B. prodigiosis* before each of six meals that the hands, the mess gear and the wash water would become contaminated with this organism. This series of tests carried us to the third or middle link—wash water—in the chain of transmission. It then remained to prove whether or not mess-kit wash water so contaminated would accomplish the last links in the transmission chain.

[The inoculating culture of *B. prodigiosis* was prepared by growing the organism on 2 per cent potato agar in large Petri dishes for twenty-four hours and transferring to salt solution. The growth of three Petri dishes was suspended in 100 c.c. of salt solution and thoroughly shaken. This gave a fairly heavy suspension for inoculating purposes. Preliminary throat swabs were taken from all men used in the experiments to determine whether or not they were free from the test organism.]

#### I. TRANSMISSION EXPERIMENT OF JULY 15, 1919

Ten men were used in this experiment. Prior to each of six successive meals, the throats, mouths and lips of five of these men (donors) were sprayed with a suspension of *B. prodigiosis*. After each meal these same men washed their mess gear in one gallon of warm water. The hands were used as mops in the washing process. Then, after the washing process had been completed by the five sprayed men, the five unsprayed men (recipients) likewise washed their mess gear in this same (donors) wash water, afterwards using it to eat with. This procedure was followed for six meals.

*Findings.*—(1) After each of the six meals throat swabs were taken from the five sprayed men (donors). Of these thirty specimens, 16, or 53 per cent, were positive *B. prodigiosis*.

(2) After each of the first three meals these sprayed men washed their hands in 500 c.c. of clear warm water; the same water being used for all men. About 50 c.c. of this was centrifugated and plated on

potato agar. Of these three specimens, 1, or 33 per cent, was positive for the test organism.

(3) The spoons of these men (donors) were pooled, and the wash water was cultured for *B. prodigiosus*. Of the six specimens, 1, or 16 per cent, was positive.

(4) The examination of the mess-kit wash water showed that, of the six specimens of each successive meal, 4, or 66 per cent, was positive for *B. prodigiosus*.

(5) The pooled hand-washings of the first three meals from the unsprayed men (recipients) were negative in this experiment.

(6) As in the case of the sprayed men the spoons of the five unsprayed men were pooled and washed. Of the six specimens of wash water, 3, or 50 per cent, were positive for the test organism.

(7) Specimens from the oral cavity of each unsprayed man (recipient) were obtained by a pooled swab of the tonsil, teeth, and lips. These were taken after the last three meals in the series. The results for each meal were as follows: fourth meal, 2 out of 5 specimens were positive; fifth meal, 2 out of 5 were positive; sixth meal, 1 out of 5 positive. Of the total fifteen specimens, 5, or 33 per cent, were positive for *B. prodigiosus*.

#### *Summary of Positive Cultures in the Five-Link Chain*

Links 1	<i>Donors</i>		<i>Recipients</i>	
	2	3	4	5
Oral cavity 53%	Hands 33%  No. 2A Mess-kits 16%	Mess-kit wash water 66%	Hands 0%  No. 4A Mess-kits 50%	Oral cavity 33%

In this experiment it will be noted that with the exception of one ring of the double link—4—the chain of transmission is complete.

#### II. EXPERIMENT OF JULY 22, 1919

In this experiment, as also in the one following, five men were used as donors of the infection and five as recipients. Before each of six meals, the mouths and hands of the donors were infected with a suspension of *B. prodigiosus*. Each gargled with about 10 c.c. of the suspension and his hands were sprayed with the suspension. Having contaminated the hands as well as the mouth there was produced a condition simulating the natural contamination in the case of sputum-borne infections. As in all experiments the donors preceded the recipients in washing their mess kits in warm water. (In this experiment as in that of July 25, the two links in the donor's chain, and the

intermediate link—wash water—were not covered by bacteriologic tests.)

*Findings.*—Covering the double fourth link and the single fifth link the procedure and results were as follows: Each of the five men, the recipients, after washing their mess-kits, washed their hands for five minutes in 500 c.c. of clear warm water. About 50 c.c. of this was centrifugated and plated. Of the thirty specimens thus obtained, 16 or 53 per cent were positive for *B. prodigiosis*. The spoons, knives and forks of the recipients were pooled after washing, and briskly shaken for five minutes in 300 c.c. of clean warm water. This was centrifugated and cultured. Of the six specimens 5 or 83 per cent were positive. Specimens from the oral cavity were obtained from each man (recipient) by scrubbing the teeth, tongue and lips with a sterile tooth brush and 50 c.c. of sterile water. In order to avoid the possibility of contamination with *B. prodigiosis* from the hand during the scrubbing process a sterile glove was used. Of the thirty specimens of mouth washings 4 or 13 per cent were positive for the test organism. These four positive cultures were from four different men.

#### *Summary of Positive Findings in Recipients*

4—Hands	53%	5—Oral cavity
4A—Mess-kits		
	83%	13%

#### III. EXPERIMENT OF JULY 25, 1919

In this experiment the procedure of the foregoing one was duplicated with the same group of men. The results were as follows: Of the thirty hand washings 11 or 36 per cent were positive. Of the six pooled mess-kit rinsings 5 or 83 per cent were positive. Of the thirty mouth washings 17 or 56 per cent were positive.

#### *Summary of Positive Cultures in Recipients*

4—Hands	36%	5—Oral cavity
4A—Mess-kits		
	83%	56%

This experimental research shows the facility with which a non-pathogenic organism may be transmitted from donor to recipient through the use of warm mess-kit wash water. The results of these tests in conjunction with the epidemiologic research, indicate that mess-kit wash water was the most prolific source of distribution of pathogenic organisms and virus infections among troops. These results are wholly corroborative of our previously advanced theory of transmission through warm mess-kit wash water, and of the paramount importance of the use of boiling water as a means of closing the major avenue of disease distribution.

## MUSEUM AND ART SERVICE OF THE AMERICAN EXPEDITIONARY FORCES<sup>1</sup>

BY COLONEL LOUIS B. WILSON, M. C.

*Assistant Director, Division of Laboratories, A. E. F.*

IN JANUARY, 1918, the Surgeon General requested authorization from the Commanding General A. E. F. to send a National Army Medical Museum Unit to France with the writer named as director. After receipt of the authorization, and after a delay of two months in planning for the collection of museum material in the camps and cantonments of the United States, the writer was ordered first to England to study the collections and methods of collecting by the British and colonial armies, and then to France for duty. In the meantime Circular No. 17 had been issued by the Chief Surgeon of the A. E. F., calling attention to the importance of collecting museum specimens and giving brief directions for their preservation.

The collection of museum and art material in France was placed under the direction of the Division of Laboratories. It was early apparent that the collection of pathologic material would be wholly dependent on the pathologists who would be making postmortems. The first task, therefore, was to assist in building up the necropsy service in the A. E. F., which at that time was very inadequate owing to lack of personnel. The need of a routine necropsy service in the A. E. F., serving as professional inspection of the diagnostic and therapeutic measures of the medical officers, became rapidly apparent during the summer of 1918. This inspectorial need was filled in a satisfactory manner, and although at no time were there enough pathologists to permit them to give more than incidental attention to the collection and preservation of pathologic material, on the whole the results were better than might have been hoped for under the conditions.

In 1917 a General Order forbade the use of cameras in the A. E. F. by anyone except the Signal Corps. In March, 1918, an elaborate schedule for the taking of photographs by the Signal Corps to be used to illustrate the Medical History of the War was approved by the Chief Surgeon of the A. E. F. In order to provide for the taking of technical photographs other than those to be used in illustrating the medical history, request was made early in May for the privilege of cabling for photographers and artists who were then in readiness to proceed from the Army Medical Museum in Washington. Approval of this request was refused by the General Staff "in view of the existing tonnage situation." The General Staff's endorsement further stated: "In this connection, it is believed

<sup>1</sup>Abstract of chapter written for the History of the Medical Department, United States Army.

that the requirements of the Medical Corps may be successfully met in this particular by the personnel and facilities already here in both the Signal and Engineer Corps." The lack of men with special training in medical illustrating in the Signal and Engineer Corps and the necessity for this special training for the production of good work were pointed out in another memorandum in July, and one officer and seven enlisted men, specially trained artists, were cabled for and arrived in France September 14, 1918.

On May 25, 1918, G. O. 78 amended previous orders and gave to the Medical Department authority to make "technical photographs of surgical and pathological interest." A survey was made of the Medical Department personnel in the A. E. F., and several photographers were found with training in the taking of photographs of medical subjects. Owing, however, to the order previously issued forbidding the taking of photographs, almost no hospitals were equipped with cameras or other photographic apparatus. Those that were so equipped were authorized to place their apparatus in use. A few cameras were available from French sources, three were borrowed from the Signal Corps, and twenty-four from the Roentgenologic Department. A limited amount of photographic supplies was obtained from French sources.

A survey of the feasible sources of supply, American, French, and British, revealed the fact that nothing but formalin was obtainable for fixation of pathologic specimens, except that a few base hospitals first to arrive in France had brought over with them a small supply of alcohol. The only materials available for color preservation were sodium or potassium acetate and nitrate, one or the other of which was obtained after long delay from French sources. These materials, photographic and pathologic, were placed in the Central Medical Supply depot, where they suffered along with other medical supplies from inadequate facilities for distribution.

After a careful survey of the situation, Circular No. 42 was issued, of which the following is an abstract:

#### AMERICAN EXPEDITIONARY FORCES

CIRCULAR NO. 42.

FRANCE, 27th July, 1918.

#### COLLECTION OF MUSEUM MATERIAL FOR MEDICAL EDUCATION AND RESEARCH

1. *Object.*—This circular is for the information of those branches of the service whose coöperation and assistance are necessary to enable the Army Medical Museum to discharge its duty of collecting all those things which may be used for medical education and research or which may be of historical interest. This material will consist of pathological specimens, bacteria, animal parasites, missiles, armor, instruments, apparatus, casts, models, paintings, drawings, diagrams, charts, statistical

tables, cinema films, photographs, radiographs, lantern slides or other things pertaining to the preservation of the health and the prevention and treatment of the diseases of the United States soldiers or to the history of the Medical Department of the Army.

2. *Scope.*—In France all collections will be limited to those things which can not be obtained readily in the United States or which are necessary for study in the A. E. F. More specifically these will relate principally to war wounds, especially lesions of the bones and vital organs, gas poisoning, trench foot, gas gangrene, traumatic and shell shock, to infections and parasitic diseases of special menace to the A. E. F. and to material of historic interest. Other material may be included if obviously desirable.

3. *Responsibility.*—It is the duty of each medical officer in the A. E. F. to direct into proper channels all such desirable material coming to his notice. In each medical unit the pathologist, or in his absence some other medical officer, will be responsible for the collection, preservation and shipment of all such material obtainable in the unit.

4. *Use in A. E. F.*—Collected material required for investigation in the A. E. F. will be shipped as early and as directly as possible to the groups of officers conducting the investigations in such manner and quantity as they may request.

After serving the needs of the immediate investigation the material, if still of value, will be preserved.

5. *Concentration Points.*—All other collected material will be shipped without unnecessary delay to concentration points (Headquarters Laboratory Division, Base Laboratories, Base Sections, etc.). . . .

6. *Final Disposition.*—At the concentration points the Museum Unit will take charge of the future preparation of all material and its shipment to the Army Medical Museum.

7. *Pathological Specimens.* (Detailed directions for fixation and preservation.)  
    . . .

8. *Shipment.*—When pathological specimens have been fixed for two weeks or more they should be well padded with absorbent cotton, wetted with the solution in which they have been last immersed, and then wrapped in water-proof paper (to be obtained by requisition) and packed with paper, excelsior, hay or similar material in a strong wooden or tin box or barrel and shipped to the most accessible point of concentration. . . .

9. *Bacteria.* . . .

10. *Microscopic Slides.* . . .

11. *Animal Parasites.* . . .

12. *Missiles.*—For the psychic effect a missile removed from the body of a wounded soldier may be given to him if he wishes to keep it. However, he may be induced to relinquish his claim when the scientific value of a comparative study of such missiles and their preservation in a museum is explained to him. The place and character of all missiles in amputation material should at least be accurately described and, if possible, sketched. All missiles and foreign bodies removed at autopsies should be carefully preserved, if possible *in situ*, with the pathological specimen. When it is necessary to remove them, their location and wound effects should be

minutely described, the description, if possible, being accompanied by photographs or sketches.

13. *Armor*.—Armor, such as helmets, or other protective body covering showing the effects of missiles, gases, etc., should, whenever obtainable, be preserved with full data concerning the incidents of their use. . . .

14. *Instruments and Apparatus*.—All instruments and apparatus of special value which have been developed or materially modified in the A. E. F. should be photographed, accurately described, and, if it seems desirable, models made.

15. *Casts and Models*.—The number of skilled casts and model makers in the A. E. F. is extremely limited. When a medical officer has some specimen, or series of specimens or cases, showing results of operations which he wishes to have illustrated in wax or plaster, he should make application. . . . for the services of a model maker.

16. *Paintings, Drawings, Diagrams*.—It is believed that in many hospitals there may be found men capable of making diagrams and sketches, furnishing graphic records of teaching or historic value to the Medical Department. Well-trained medical illustrators, on the other hand, are scarce, and their services, to be utilized in an economical manner, must be centrally controlled. . . .

17. *Cinema Films*. . . .

18. *Photographs*. . . .

19. *Radiographs*. . . .

20. *Original Publication*.—All pathological specimens, casts, models, paintings, drawings, photographs, radiograms, etc., should be accompanied by the name of the medical officer collecting them, and of the medical officers, if any, specially interested in their subject matter. This is important not only for the occasional necessity of retracing them back to their origin for additional data, but also that the privilege of original publication of the data by the officer with whom they originated may be respected.

21. *Supplies*. . . .

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As a result of the preliminary work above described, the increase in the total number of morbid anatomists and the placing of them at advantageous points and of personal appeals while inspecting laboratories, a considerable interest in the collection of museum material was developed. The battle activities in June and July, however, so overwhelmed the Laboratory Division, as well as other divisions of the Medical Department, that very few collections of pathologic specimens were made; the pathologists, still most discouragingly lacking in numbers, were hopelessly overworked and very rightly gave their attention to rendering information to the attending medical and surgical officers which could be of immediate service with the sick and wounded in as many cases as possible rather than to collecting pathologic material for scientific study in the future. In October and November the epidemic of influenza, coinciding as it did with the Argonne offensive, the period

of greatest battle activity in the A. E. F., equally overwhelmed the pathologists, though by this time their number had materially increased. During this period an excellent necropsy service had been developed, but attention could be given in only a minor degree to the collection of specimens. Nevertheless, despite the limited personnel and the lack of equipment, of supplies, of containers, of transportation, of time, and in fact of everything except an avalanche of tissues, upwards of six thousand pathologic specimens were collected, preserved, and shipped to the Army Medical Museum.

These specimens for the most part illustrate the principal groups indicated in Circular No. 42 and relate chiefly to war wounds and gas poisoning. Early lesions of war gas poisoning were especially difficult to obtain, owing to lack of transportation or pathologists and to the necessity for the centralization of specimens for immediate study at the pathologic laboratory in the Chemical Warfare Service with which the Medical Department attempted to coöperate in every possible manner. However, a small but a fairly representative collection of these lesions was obtained. A number of good specimens illustrating the more striking types of lung lesions occurring during the epidemic of influenza in the fall of 1918 were preserved. Lesions illustrating the often unique course of typhoid and paratyphoid fever in vaccinated men were also collected in considerable numbers during the fall and winter of 1918-1919. In addition, a fairly good collection of brain and cord and peripheral nerve lesions, of congenital anomalies, etc., was made.

The collection of about 2,000 selected microscopic slides of tissue was shipped to the United States.

A small collection of missiles which had caused injuries and which had been removed at surgical operations was preserved. Most of these missiles were, however, according to the instructions in Circular No. 42, returned to the wounded soldier. A fairly complete collection of unused small arms missiles and fixed ammunition of the various warring nations, together with a few specimens of heavy ordnance missiles and fragments thereof, was forwarded to the Army Medical Museum.

A representative collection of rifles, pistols, bayonets, trench knives and other weapons directly concerned in the making of wounds was forwarded to the Army Medical Museum.

A large collection of helmets, which showed evidence of having been hit by missiles which they had either warded off or had been penetrated by, together with a small number of pieces of body armor and metal objects such as canteens, mess kits, trench mirrors, etc., which similarly had been struck by missiles, was collected and shipped to the Museum.

A number of medical and surgical instruments and pieces of ap-

paratus of American, ally or enemy origin which had been developed or materially modified during the progress of the war were collected and shipped to the Army Medical Museum.

Several artists (medical illustrators, wax modelers *et al*) arrived in France attached to Base Hospital No. 115, which was stationed at Vichy, in September, 1918. An art and photographic section was therefore established in Vichy in the Central Laboratory of the Base Hospital Center, using this personnel and its equipment. Other artists were assigned from time to time to the work in this art section and were ordered out therefrom to various hospitals in the A. E. F. where medical illustrating was needed. This group produced 35 casts of surgical cases, about 200 drawings and paintings, and more than 1,000 photographs of technical subjects. In addition to these illustrations and photographs of technical subjects centered at Vichy, a number of other drawings, paintings and photographs of technical subjects were made in other centers, particularly at Allerey, Beaune, Chateauroux and Paris.

The cinema camerist, photographers and artists cabled for in August, as mentioned above, reported for duty to the Director of Laboratories September 14. This personnel was distributed as advantageously as possible, principally to cover the activities of combat divisions. Here they remained on duty until the signing of the armistice. Late in September, 1918, the Museum Section of the Division of Laboratories had been charged with the duty of coöoperating with the Signal Corps in the making of photographs for the Medical History of the War. The Signal Corps, though it had been authorized in March, 1918, to prepare such photographs, had been able to cover but little of the medical activities of the A. E. F. except the more popular subjects which were needed for propaganda purposes. After the signing of the armistice, and as soon as the general photographers of the Medical Department could be released from their duties with combat divisions, a Photographic Bureau of the Medical Department was established in Paris for the making and collecting, both with Medical Department personnel and the Signal Corps personnel, photographs and moving pictures illustrating the Medical History of the War.

The negatives of the medical pictures taken by the Signal Corps Photographers were developed by them and two prints of each made for the Medical Department Bureau, the negative being retained by the Medical Corps. The negatives made by medical personnel were developed, printed and filed in the Medical Department Bureau. This bureau filed more than 10,000 still pictures, titled and cross-indexed. It supplied about 5,000 proof copies to hospital organizations for use in their several histories and 1,500 prints for medical officers of the General

Staff of G. H. Q. The bureau also photographed about 350 dental specimens. It has made about 40,000 feet of moving-picture film of surgical and medical subjects, such as activities in and around hospitals, convalescent patients, psychiatric cases, etc. In addition, it filed about 20,000 feet of motion pictures made by Signal Corps photographers. Nineteen copies of the motion picture, "Fit to fight," were made for circulation in the A. E. F. Two other propaganda pictures—"Fit for America" and "How to Avoid Typhoid Fever"—and six copies of a two-reel anatomic venereal picture were also made.

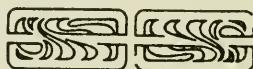
The Radiographic Division, on request from the Division of Laboratories, packed and shipped about 2,000 selected X-ray plates from their point of origin directly to the Army Medical Museum. These were selected for their technical quality as well as for their scientific interest and cover in a number of instances special series of cases or series showing different stages in the treatment and healing of the same case.

Immediately on the signing of the armistice it became obvious that transportation facilities for specimens, not only within the A. E. F. but also from base ports to the United States, would be exceedingly limited. A supplemental museum circular was therefore issued from the Chief Surgeon's office giving directions for expediting transportation and calling attention to the desirability of obtaining material showing stages of healing, etc. As a result of this circular the transportation of pathologic specimens directly to base ports from their points of origin instead of through collection centers was materially expedited, though it resulted in having to depend on a large number of shippers for details concerning the individual specimens and consequent lack of detailed information in some instances. Shipment of museum material to the United States was greatly hampered by the confusion incident to general shipping conditions in France and to the lack of tonnage at the close of the war. All the specimens, however, were carefully packed, and it is believed they will not materially deteriorate even if delayed one or two years in transit.

In planning for the future collection of material for the Army Medical Museum a definite policy should be clearly stated and adhered to. This should be based on the principle that such collections are primarily for purposes of education and research and only remotely of historic interest. Important historical material is rare, isolated, and difficult of recognition. That which is too often selected is only of curious interest and in a little while becomes museum junk. A brief Army Medical Museum Manual which should clearly define the objects of the museum collections, state in detail the material desired and why,

and give directions for simple methods of collecting, preserving, and shipping specimens, if widely circulated in the Medical Corps and among physicians, especially laboratory men in civil practice, would go far toward developing the proper conception of medical museums and greatly improve the character as well as increase the quantity of the collections. The coöperation of the Association of International Medical Museums might well be sought in planning such a manual.

In plans for future expeditionary forces of the United States Army it is suggested that the collection of the material for the Army Medical Museum be made a part of the duties of the Division of Laboratories. This division should also be charged with the duty of making, collecting, and forwarding moving pictures, photographs, drawings, paintings, models, etc., representing the administrative, general, and technical activities of the Medical Department in all its aspects. These photographs, if collected by previously prepared personnel and their supervision made the definite duty of every laboratory officer, would be of inestimable value from both the historical and scientific stand-points. Restrictions on photography, such as operated early in the history of the A. E. F. so greatly to hamper the activities of the Medical Department, would seem to be unnecessary for safeguarding information, the Laboratory Division no doubt being as trustworthy as the Signal Corps. Preparation should be made in peace-time for the selection of trained personnel for the various highly specialized functions which must necessarily be performed. Provisions should also be made for a standard photographic equipment to be supplied to the laboratories of various types. Special attention should be paid to photographs of methods of handling the wounded and of the appearance and treatment of battle injuries in forward areas, an adequate knowledge of the conditions of which is so essential and yet so difficult to convey to the inexperienced medical officer.



## REPORT OF SIX CASES OF TRAUMATIC ANEURYSM<sup>1</sup>

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SIX cases of aneurysm, as a result of trauma from gunshot, were found in this hospital in 3,311 surgical cases admitted from July 20, 1918, to November 12, 1918. Traumatic aneurysms, which in civil life are rather rare, being due mainly to stab wounds and injuries by machinery, have increased greatly in number in this war as the result of reduction in the caliber of the military rifle and the increased popularity of the machine gun. The machine-gun bullet or the .30 caliber jacketed bullet is capable of notching a vein or artery without great destruction, whereas the larger pieces of ordnance frequently destroy large sections of the vessel, as well as the soft tissues and bone.

*Frequency of Traumatic Aneurysm.*—La Garde reports 74 cases in the Civil War; 44 in the Franco-German War, and at Santiago, in 1898, five cases were observed in 1,400 wounded. The number of cases in this great European War will not be known for some time to come, but it is safe to say that they will number several thousands when the final statistics of the Allied and Central Powers are published. For instance, Zahradnicki, in 1915, presented a series of 425 cases collected by 45 different authors in the Turko-Balkan War of 1912 and 1913, and the first two years of the world war.

*Vessels Involved.*—As is shown in the chart on page 175, we had two arterial, one venous, and three antero-venous aneurysms in this series. The vessels injured were widely distributed for so small a series of cases; the vertebral arteries and the internal jugular vein were injured in case I, the brachial artery and vein, the femoral artery, popliteal artery, the popliteal artery and vein and the anterior tibial vein making up the other cases.

Following is a brief history of each case:

*Case I.*—Pvt. B, Co. C, 108th M. G. Bn. Wounded: August 31, 1918. Diagnosis: G. S. W. multiple, including right side of neck, penetrating, entrance posterior triangle lower third below ear. Admitted to Base Hospital No. 11 September 9, 1918.

On September 15, 1918, patient complained of pain down entire right arm. On examination there was a small elongated mass 7 by 4 cm. immediately below scar of debridement at the point of entrance of the bullet in the neck; expansile pulsation and a machine-like systolic bruit. Pressure with adhesive tape was applied and absolute rest in bed ordered. The mass continued to increase in size, and on September 18, 1918, the patient was operated.

Diagnosis: Arterial venous aneurysm secondary to G. S. W.

<sup>1</sup>From Surgical Service of Base Hospital No. 11, France.

Name	Wounded	Diagnosis	Admitted to A. B. H. No. 11	Signs and symptoms	Vessels involved	Date of operation	No. of days meter injury	Results
I. Pvt. B, Co. C, 108th M. G. Ru.	Aug. 31, 1918..	G. S. W., multiple, Right side neck, penetrating lower third posterior triangle.	Sept. 9, 1918..	Mass. Pain down entire right arm. Expansile pul- sation. Systolic bruit.	Vertebral artery and internal jugular vein.	Sept. 13, 1919..	18	Died
II. Musk. H, P. W., 169th Inf..	Nov. 1, 1918..	G. S. W., multiple. Left fore-arm, an- terior aspect, per- forating lower end of biceps. F. C. C. skull. Partial de- struction frontal bone.	Nov. 11, 1918..	Mass. Pain, ede- ma; expansile pulsation; bruit.	Brachial artery and vein.	Jan. 2, 1919...	62	Died. Ba- silar men- ingitis.
III. Pvt. H, Co. D, 12th F. A....	Nov. 4, 1918..	G. S. W. left thigh, middle third, from aeroplane M. G.	Nov. 12, 1918..	Mass. Bluish discoloration; pain; edema.	Femoral artery, left leg.	Nov. 26, 1918..	22	Cured.
IV. Pvt. S, Co. B, 111th Inf....	Nov. 19, 1918..	G. S. W. right leg, lower third, pen- etrating. Severe.	Nov. 22, 1918..	Mass. Edema of foot, pain and fluctuation.	Anterior tibial vein.	Nov. 1, 1918...	11	Cured.
V. P t. A, M. D., 23th Inf....	Nov. 6, 1918..	G. S. W. right knee, perforating. Se- vere.	Nov. 11, 1918..	Mass. Expansile pulsation; stiff- ness of knee- joint.	Right popliteal artery.	Dec. 9, 1918...	40	Cured.
VI. Cpl. W, Co. K, 16th Inf....	Oct. 4, 1918..	G. S. W. right knee, perforating.	Oct. 13, 1918..	Mass. Expansile pulsation, thrill- to and fro mur- mur.	Popliteal artery and vein.	Nov. 21, 1918	48	Cured.

Shortest time between injury and operation, 11 days.

Longest time between injury and operation, 62 days.

Average time between injury and operation, 33.5 days.

Operating notes: Dissection of right neck exposed pulsating venous-walled sac 1 inch in diameter by 2 inches long, situated under the sterno-cleido muscle at its center; this sac being intimately connected with the common carotid artery and internal jugular vein above and below sac. Pressure on these ligatures in no way stopped blood supply to sac. It remained same size and pulsating.

In attempting to dissect out sac at external border, same ruptured at posterior aspect, severe hemorrhage ensuing. On introducing finger into aneurysmal sac, rough denuded fifth and sixth cervical vertebrae could be felt, which formed part of the sac apparently communicating with vertebral artery. Aneurysmal sac packed with gauze and wound closed.

*Case II.*—Musketeer II, prisoner of war. Wounded: November 1, 1918. Diagnosis: G. S. W. Multiple. F. C. C. frontal bone; loss of skull substance, and hernia of brain with membrane protruding through opening. Left arm, anterior aspect, lower end of biceps perforating. Severe. Admitted to Base Hospital No. 11, November 11, 1918.

Patient had no history; showed marked aphasia and was delirious. On November 27, 1918, answered questions fairly well. Had only partial motor aphasia, knee reflexes increased, no Babinski or ankle-clonus. Swelling on lower left arm, increasing gradually, very hard, only slight expansile pulsation, systolic bruit present. Mass on arm gradually increased in size.

Diagnosis: Arterio-venous aneurysm, brachial artery and vein.

Operation: January 2, 1919. A large clot was removed and both ends of the artery and vein ligated. Incision was closed tight.

Progress: Compensatory circulation had been established and there was no disturbance in the blood supply to the fore-arm and hand. Patient died of Basilar meningitis, secondary to F. C. C. of frontal bone.

*Case III.*—Pvt. H, Co. D, 12th F. A. Wounded: November 4, 1918. Diagnosis: G. S. W. left thigh, from aeroplane M. G. Penetrating middle third. Severe. Admitted to Base Hospital No. 11, November 12, 1918.

Had been debrided on November 6, 1918. Foreign body not removed. On November 20, 1918, a radiograph showed an incomplete comminuted fracture just below junction of middle and lower third of left femur with M. G. bullet in soft tissue. On November 23, 1918, a small mass, about the size of a hen's egg, was noticed on the inner side, lower third of left thigh. There was some bluish discoloration, but no pulsation nor thrill.

Diagnosis: A diffuse traumatic aneurysm of femoral artery.

Operation: November 26, 1918. 400 c.c. of clotted blood and M. G. bullet removed. The femoral artery was ligated at its proximal end and the wound packed with medicated gauze.

Progress: On December 9, 1918, after two weeks of Carrell-Dakin's treatment, the wound was clinically and bacteriologically clean, and wound was secondarily sutured. On December 18, 1918, the stitches were removed. December 20, 1918, no edema of foot or disturbance of circulation. January 1, 1919, walking around ward in good condition. Discharged, cured.

*Case IV.*—Pvt. S, Co. B, 11th Inf. Wounded: October 19, 1918. Diagnosis: G. S. W. right leg, lower third, penetrating. Entrance at level of external condyle right tibia; exit anterior surface, junction of middle and lower third. Severe. F. S. fibula, right lower third. Admitted to Base Hospital No. 11, October 22, 1918.

Wounds of entrance and exit practically healed, but there was a small hard mass, about the size of a hen's egg, slightly fluctuating, on the anterior surface of right leg,

lower third. There was no pulsation nor thrill, but foot was edematous and patient complained of a dull pain in lower leg and foot.

Diagnosis: Venous aneurysm, anterior tibial vein.

Operation: November 1, 1918, incision over anterior tibial vein. Small clot of blood removed. Anterior tibial vein ligated at both proximal and distal ends, and sac resected.

Progress: December 1, 1918, small amount of edema in foot after patient walked for a time. January 1, 1919, collateral circulation entirely established. No edema. Patient discharged, cured.

*Case V.*—Pvt. A, M.D., 28th Inf. Wounded: November 6, 1918. Diagnosis: G. S. W. right knee, penetrating. Entrance outer aspect. Severe. Admitted to Base Hospital No. 11, November 11, 1918.

Debridement wound on inner aspect of right knee healed. November 15, 1918, small mass with expansile pulsation and machine-like bruit noticed for first time. Patient did not complain of pain, but had some stiffness in knee-joint. No disturbance in circulation of leg, but mass increased in size gradually.

Diagnosis: Aneurysm, popliteal artery, right leg. Severe.

Operation: December 9, 1918, clot removed and artery ligated above and below seat of injury.

Progress: December 30, 1918, wound entirely healed, collateral. Circulation fully established. Discharged, cured.

*Case VI.*—Cpl. W., Co. K, 16th Inf. Wounded: October 4, 1918. Diagnosis: G. S. W. right knee, perforating. Entrance middle of inner aspect one inch above articular surface. Exit external margin of popliteal space. Severe. Admitted to Base Hospital No. 11, October 13, 1918.

November 1, 1918, small mass, about the size of a hen's egg, noticed in right popliteal space. Had expansive pulsation, marked thrill, and a to and fro murmur. Elastic bandage was applied with the idea of assisting clot formation. Pressure was applied for seventeen days with a slight reduction in the size of the mass for the first five days. Mass was increased in size followed by a marked edema of the leg and foot, which were, however, never cold or discolored.

Diagnosis: Arterial venous aneurysm, popliteal artery and vein.

Operation: November 21, 1918, incision over mass. Large sac extending full length of popliteal space and connecting with both artery and vein. Clots removed. Ligation of both ends of artery and vein and communicating branches to sac, which were numinous. Primary closure.

Progress: November 30, 1918, stitches removed. December 25, 1918, circulation entirely compensated. Patient discharged, cured.

#### SUMMARY

1. Of the six cases reported, three were arterio-venous, one arterial, one venous, and one diffuse. Of these cases four were discharged cured, one died of meningitis, secondary to compound comminuted fracture of skull (Case II), and one died of shock, following loss of blood at operation (Case I).

2. All vessels involved were ligated following long periods of complete rest, immobilization and pressure over mass.

3. The period of rest, varying from 11 to 62 days (an average of

33.5 days), was sufficient to allow collateral circulation to become fully established, thereby diminishing the risk of post-operative gangrene.

4. It is essential that all clots be removed, thereby relieving pressure on the remaining vessels and lessening the chances of gangrene from the interference of circulation below.

5. Post-operative treatment is very important: (a) The wound should have a large, soft, sterile dressing applied. (b) The extremity should be allowed to lie in its natural position. Splints are contraindicated, as pressure necrosis is apt to occur. (c) No hot-water bags should be used, except to warm the bed before the patient is returned from the operating pavilion, as sloughing may occur in those parts of the extremities in which collateral circulation is not fully established. (d) If heat is thought necessary to aid the circulation in the extremity, the therapeutic light is advised.



## COMMENTS ON THE ARMY FIELD RATION

BY MAJOR CLEON C. MASON

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IT IS not the writer's intention in this paper to attempt to prescribe a field ration. This has been done by practically every American general, beginning with George Washington, and up to the present it cannot be said that we have found a satisfactory field ration. The writer will briefly discuss some phases of the problem of feeding troops in the field which came under his personal observation while on duty as Nutrition Officer of the 91st Division, U. S. A. During the period of observation this division was in the eighth training area at Montigny-le-Roi, advancing to the front, in combat during the first phase of the Meuse-Argonne offensive, and in the Ypres-Yser offensive in Flanders where the division occupied Audenarde, Belgium, at the time the armistice was signed.

The field ration, as the name implies, is a ration intended to subsist an army in the field. In the war just ended it was rather difficult to draw any sharp line of demarcation between field and garrison, speaking in terms of the ration. In some sectors troops holding front line positions were to all practical purposes living under garrison conditions and could obtain the full garrison ration, while other troops some distance from the front found it difficult to obtain a full ration of any sort. Eventually it was found that the troops lived on two rations, the reserve, which for the time took the place of the field ration, and a ration which was neither field nor garrison, but might be called a "glorified" field ration, or better still, a short garrison ration.

Let it be stated here, that during the entire time this division was in action in France or in Flanders, there never was a single instance of a real lack of food. Through all the divisional movements, and they were many, the Quartermaster Department never failed to deliver to the railhead. There were numerous instances where there appeared to be a lack of good judgment; for example, shipping six-pound cans of corned beef to be used as an emergency ration, or the persistent shipping of canned salmon to troops just out of battle, a time when morale and body are low and the time of all times to see that the troops get the best ration there is to be had, in order to restore the men as quickly as possible. Anyone who has had to subsist on canned salmon for any time will realize how it becomes almost nauseating in a short time. At other times there seemed to be a lack of close coöordination between G3 (operations), G. H. Q. and G4 (supplies), G. H. Q. in that the Quartermaster did not receive ample notification of intended movements whereby he could regulate, not only the

shipments, but the types of food to be furnished. It is quite obvious that the future action of a division should materially affect the character of the food to be shipped to the railhead. When it is known that on a certain date a division will engage the enemy, it is apparent that that division should receive canned foods, meat, vegetables, etc., which can be cooked if conditions permit or which can be eaten without cooking if it becomes necessary, as it often did. And further, it would be extremely unwise to send up that food in six-pound containers, since subsisting under such conditions becomes almost entirely individual, or at the best very small groups. The shipping of frozen meats and fresh vegetables to troops in combat, except those holding trenches, means large financial losses to the government as much of the food cannot be delivered to the soldier. This last did not hold during the fighting in Flanders where good roads and plenty of them permitted of rapid transportation to the combat kitchens. In justice it must be said that the Quartermaster Department always functioned.

Once delivered to the railhead the problem of the ration became divisional; it was then a question of equalizing the days supplies and making the deliveries. Sometimes this was simple, again it presented many difficulties. When there was a plentiful supply of transportation, the roads good, and conditions which permitted of daylight movements, the division fared well; but, and this was often the case, when there was a shortage of trucks, when the roads were not only pitted but subject to constant shell fire, and the deliveries had to be made at night the problem became quite complex. Under such circumstances isolated units would often have to subsist on the reserve ration, and any one who has seen the American soldier throw away his two days reserve while marching, or the avidity with which he will eat the whole thing for lunch the first day, will appreciate the fact that these units fared rather poorly when the necessity arose.

The division also had to handle the problem of the proper preparation of the food. Good, wholesome supplies can be quickly rendered uneatable in the hands of a poor kitchen personnel; on the other hand food of a rather low quality can be made highly palatable. In the future it is greatly to be desired that more and more attention be paid to the training of cooks and mess sergeants, not forgetting that every officer who commands an organization must also have a practical working knowledge of the functioning of a kitchen. With this end in view, cooks and mess sergeants should be trained to get the greatest variety out of the simplest components. Time and again it was recommended that troops in the training camps in America be subsisted on the ration in kind. This policy was not generally adopted with the result that kitchen per-

sonnel who were accustomed to well equipped kitchens, and abundance of raw foods of all varieties were almost lost when required to use the field range in the open, a limited variety of food, and poor equipment. It is little wonder that stew became the stock dish. It is all well enough to teach an army how to live in garrison, but if that army is to subsist in the field with any dietetic comfort it must be given some field training and some knowledge of the conditions to be faced as far as food is concerned.

It can be gathered from the above statements that the problem of the field ration has different aspects; first, physiological; second, psychological; and third, practical. This division is not absolute, since each phase must of necessity ramify in the others. The ideal field ration must satisfy the demands of each of the three divisions, that is, it must be a ration which will meet all the physiological needs of the body, with no great excess which would only become a burden on the transportation and a financial loss; a ration which is always pleasing to the soldier's palate, an obviously unattainable ideal; and a ration which keeps well, is packed well, and is readily transported.

Physiologically it is comparatively easy to lay down a ration. From the most recent studies available, those made by the Department of Food and Nutrition, Surgeon General's office, U. S. Army, on soldiers in all the large American camps it was found that under all conditions, weather, work, etc., the average daily per capita consumption of food energy was between 3,600 and 3,700 calories with a distribution of 13 per cent protein, 18 per cent fat, and 69 per cent carbohydrate. Using these figures as a basis, it follows that to meet the demands of the average soldier the ration must deliver not less than 3,600 calories, or allowing for unavoidable losses it should contain in gross about 4,000 calories with an elemental distribution approximating the 13, 18, 69 ratio given above. Because of its high heat value per unit of weight it might be well to increase the number of fat calories to perhaps 25 per cent with a relative decrease in the other elements. This fact accounts for the advocacy, by most men long trained in field work with troops, of bacon as a regular component of a field ration. Bacon delivers about 200 calories per ounce, contains about 10 per cent protein, and is one of the most concentrated foods. It has the further advantage of keeping well, being easily transported, easily prepared, and as a regular food the troops will eat it longer than any other form of meat without complaining.

Hardbread, like bacon, is classed as a concentrated food, having an energy value of about 100 calories per ounce, 10 per cent being a good grade of protein. Hardbread, to be satisfactory in the field, must be in tin or some equally protective container which will guard against the wear

and tear of the elements and transportation, and when once in the hands of the soldier, from nibbling.

By using 16 ounces of hardbread and 10 ounces of bacon it is possible to give the soldier 90 grams of protein with 3,600 calories per day, and with a total weight of only one and three-quarters pounds, whereas the garrison ration, delivering about 4,400 calories, weighs approximately four and one-half pounds. The lack of bulk in the bacon-hardbread ration is to a great degree offset by the relatively high fat content, as the ingestion of fats materially retards digestion and greatly prolongs the sense of fulness.

The possibility of getting a ration which is too salty should be carefully considered, as an excess of salt will inevitably lead to a high water consumption, and when an army is operating in a new country without complete knowledge of water sources, the practice of drinking at every well or spring becomes a dangerous one. For this reason corned beef, with its high salt content, should be used rather sparingly in the field.

In general the physiological problems of a field ration are not difficult. It is only when one considers the physiological questions in their relation to the very important practical considerations involved that the real complexity of the situation becomes apparent.

The question of the psychology of the ration is equally, if not more important than that of the physiology. From watching troops under all conditions of warfare, in fact, watching the same organizations from their induction into the service to the armistice, the writer has become firmly convinced that no other single factor plays so important a role in the maintaining or destroying of army morale as food. This is especially true in an army composed of civilians as our army was. Much care and thought has been given to maintaining the physical condition of the soldier. He is vaccinated, inoculated, regularly examined, and carefully trained physically. At the same time, during the training period, ample amusement in the form of games, motion pictures, theatrical performances, and reading is supplied. At such periods the food is usually good, and quite naturally the important part it will play in maintaining morale is overlooked. Later, in advance rest areas, field operations, or combat, where it is impossible to furnish the soldiers with amusements, food becomes an almost vital factor in more ways than dietetic. For this reason, if the ration is to fulfill its function completely, it must serve not only the body needs of the soldier but must satisfy the palate as well.

The average division spends a comparatively small amount of its total time in the field in combat. There are periods of advance to front line sectors, usually a trying ordeal to every division fresh from a training area, being, as it were, a tryout of all the divisional machinery. There are

periods of engaging the enemy when the soldier faces all the nerve racking ordeals of war. There are periods when withdrawal to advance rest areas is under way, followed by a period of rest. Beyond certain points the advancing troops meet shell-fire and the same is true when troops are withdrawing, while some of the advance rest areas were never free from harassing night bombing by aviators. This more or less continual fire from the enemy has, quite naturally, a disturbing effect on the general troop morale. At such a time it is the writer's opinion and experience that the strongest weapon in the hand of organization commanders is food. During three months of duty with an active division it was always possible to determine the strong and the weak organizations by simply visiting the kitchens. The kitchen mirrors with unerring accuracy not only the ability of the commander but the quality of the men. And this problem of food cannot be entirely controlled by the officer in charge. The Staff of General Headquarters must have a full appreciation of the situation at the front, a willingness to meet every reasonable request from the combat divisions, and should give careful attention to the character and variety of the food which is going forward.

Some items should always reach the fighting soldier, even at the cost of other components of recognized value. Candy of any sort, if it is available, should go to these troops at all times. It is quite remarkable to see the influence of candy on a division which has subsisted on coffee, frozen beef, low grade war bread and potatoes. Another item is tobacco. While the amount is small still it is enough to keep the soldier well contented for the time. In combat divisions neither the sales commissary nor the welfare organizations can be relied upon and these two articles are always in demand.

From the foregoing it is seen that the problem of meeting the physiological demands of a good diet is not hard, nor is it hard to keep the soldier contented with his food, provided the practical questions involved can be solved. A sufficient quantity of well-cooked, palatable food, with some candy and a little tobacco answers both demands.

The present war has been, to a large extent, one of transportation, victory falling to the side with the most trucks. The question of feeding troops becomes eventually a question of transportation and any attempt to build a satisfactory field ration must also be an attempt to solve the transportation problems. Not only must the ration be as light as possible, it must be so packed that it is adaptable to transportation. This means that food containers have to be considered. Large quantities of hardbread were ruined, due to the fact that it was not in weatherproof containers, nor did the containers dipped in paraffin help any for the wax covering cracked as soon as it was cold, and water entered the package.

as readily as before. This matter of containers presents a number of problems, quite as important as the question of what they shall contain. (1) What is the best shape for the container? (2) What size shall the container be? (3) Of what material shall the container be made? Shape, size, and material, further, bear quite important relations to the transportation available and to the type of pack in use. As to material, up to the present nothing better than tin has been found. Fiber may be developed in the future, but at present tin is superior in spite of certain disadvantages. As to shape, the square container certainly packs more readily, but square containers were impossible to obtain in any quantity due to the uniform use of the round can in America. There is a field for considerable experimental work on this subject of the container in relation to the soldier's pack. As a matter of fact the pack itself will stand a good deal of critical study with a view to improvement.

During active campaigning the following ration was carried by a number of officers including the writer, and while not used as a continued diet, still it did furnish a large number of meals and was used enough in the aggregate to be thoroughly tried:

Two 1-pound tins of hardbread.  
Two 11-ounce tins of baked beans.  
One meat can of sliced bacon ( $1\frac{1}{2}$  pounds)  
One condiment can:  
    compartment *a* crushed soup cubes.  
    compartment *b* soluble coffee and sugar mixed.

In a real emergency this ration, with the exception of the soup cubes, will deliver its full fuel value without cooking, and in a fairly palatable form. If fires can be used it offers an endless variety of ways of preparation. This ration will give the following energy values:

	<i>Calories</i>
Bread.....	3,594
Beans.....	820
Bacon.....	4,858
Sugar, 3 oz.....	348
<hr/>	
Total.....	9,620 or 4810 calories per day.

The protein content of the ration is 186 grams or 93 grams per day. This gives a diet with 84 grams of protein and 4,810 calories, ample for any person. The fat content of the ration, while quite high, is more apparent than real, for in the cooking a considerable portion will be lost and with this loss in fat there will be an actual decrease in caloric value and a relative increase of protein and carbohydrate.

This ration is not proposed for adoption, but given as one which was personally found satisfactory. After all is said and done, the laying down

of a satisfactory field ration cannot be done in an office or a laboratory miles from the organization to be fed, nor can a ration as laid down in Regulations always suit all field conditions. The field ration must be a highly flexible arrangement based on intelligent reports from the organization by some officer especially qualified to advise regarding the needs after he knows the transportation situation, the climatic conditions, the character of future movements, the dietary habits of the command, and the status of local food supplies. Further there must be a close co-operation by those in charge in the rear on the assumption that the officer with a combat division probably knows more about existing conditions forward than the supply officer in the rear.

If divisional nutrition officers could be advised from time to time regarding available supplies, time required for shipment, and if the supply officers would, as far as possible, comply with the requests of these officers there seems no reason why a division in the field should not subsist on a ration which is entirely correct.



## THE TREATMENT OF CATARRHAL DEAFNESS

By PHILIP RICE, M.D., F.A.C.S.

*Late Captain, Medical Corps, United States Army*

THE problem of catarrhal deafness is one of increasing embarrassment and seriousness to the aural specialist in the army medical service. Not only is the number of the actual deaf very large, but the number of those with strong predisposition to deafness, which predisposition requires only a little of the exposure of a soldier's life to become activated, is still greater. For both classes the aurist has at present little encouragement to offer. While he has made splendid progress in many departments of his work, in this particular one he stands quite where he did a generation or more ago. Morbid processes which twenty-five years ago were exceedingly baffling problems are today simple affairs; catarrhal deafness, however, remains a riddle to most of us.

For this, several explanations might be offered and a discussion of these would be both interesting and profitable, but time will not permit. Let us turn at once to the subject of the treatment of this intractable condition. Let us begin by asking ourselves the question: What is essentially required in order that a treatment be successful? In other words, what are the fundamental lesions to be overcome? When we have answered these questions, then, I think, we will not only have accounted for our failure to progress and our failure to cure, but we shall be on the highroad to better things.

The various pathological conditions need not be discussed in an extensive way. Suffice it to say that each, when carefully traced, will be found to have its origin in one or more of four fundamental states, namely, deficient nutrition, engorgement of the deeper tissues, ankylosis of the ossicular chain, and tubal occlusion. Atrophy, hyperplasia, sclerosis, etc., are all part and parcel of these fundamental states, variously modified in different individuals, of course, but part of them. Hence, when we come to the matter of the treatment, these modifications require no special consideration; the treatment which will reach the root of the trouble will likewise reach them.

These are very general heads, to be sure, and not the usual and academic classification. Nevertheless, for our present purpose they will serve better than any other. What we are after is a reasonable and practical foundation on which to rest a method of treatment. It must be clear when we have brought the nutrition up to normal, overcome a tubal occlusion, reestablished a normal relation between aerial conduction, and bone conduction, broken up an ankylosis, that an improve-

ment in the hearing must of necessity follow. And this is, after all, our only goal.

This view of the problem compels us to extend the scope of our therapeutics beyond that which aurists generally observe. This means that we must give attention to the state of the general nutrition. The nutrition of the middle ear can never be normal while the general nutritive processes are below normal. My observation and experience lead me now to take into very careful consideration the state of the abdominal functions in every case. Deficient function on the part of the abdominal organs results in sluggish general circulation, mucous membrane engorgement and a host of other conditions which, if not the direct precursor of middle ear catarrh, are sure to contribute generously to this or whatever other morbid process may be going on in the tympanum. The importance of this, I believe, has been overlooked by aurists, or at least not sufficiently heeded.

What amounts to practically the same thing as the subject of the general nutrition is that of the general circulation. Engorgement of the membranous lining of the Eustachian tube can never be corrected with mere inflation or any other local measure while there is a sluggish circulation accompanied by engorgement of the mucous membranes generally. We have wisely given more attention in recent times to abnormalities in the upper respiratory tract in our efforts to cure deafness, but it is doubtful if we realize the importance of extending these corrective measures and taking into account factors which, though more distantly located, are nevertheless just as directly related to the middle ear.

However, it is not the aim in this brief article to cover the entire subject of the treatment of catarrhal deafness. I desire more particularly to bring to the attention of the medical profession an instrument which was constructed for me some years ago aimed to reach and correct the four fundamental defects above mentioned. After nine years of experience with it in several hundred cases, I am happy to say that I now undertake the treatment of catarrhal deafness with as much confidence of success as it is possible for a physician to have in the treatment of much simpler conditions.

This instrument, which I have named Concusso-Masseur, consists of a magnetic coil in the center of which is a movable core which, when energized, moves up and down at the rate of about 3,500 per minute. As it comes down it strikes a flexible brass diaphragm over an airtight compartment, the result being a sharp concussion vibration. The effect, it will be seen, is entirely vibratory. Let me hasten to say, however, that this effect is in no way similar to that produced by the instruments constructed on the principle of the Delstanche masseur.

The effect of the Concusso-Masseur is that of a pure concussion, whereas that produced by the other instruments is pressure and suction. The effect of the former is stimulating, clearly desirable; of the latter, by their pressure and suction action, is devitalizing. The former is followed by hyperemia and an improved tone, the latter by relaxation, stasis and a lowered tone.

A treatment consists of a five or six minutes application of the vibrations through the Eustachian catheter and about two minutes through the external auditory canal, varying the time according to the nature of the case. Thus it will be seen that a treatment means the application of from 18,000 to 20,000 mild but sharp concussions to the auditory apparatus. Experience leads me to urge daily treatments. Far better results are thus obtained and in less time. It is clear, if we can maintain an active hyperemia for an hour or more daily, more is accomplished in a reconstructive way than if we can do this every two or three days only; there is less going back between treatments.

The aim of this method is directed at the most essential factor, namely, the circulation. Whenever we are able to raise this up to normal—indeed, raise it above normal in the beginning—there follows a revitalization of the histologic elements, a resorption of waste materials deposited in the tissues, a reduction of tissue engorgement, and finally a softening and breaking up of adhesions with accompanying increased suppleness of the auditory apparatus.

That the methods generally employed—and these have been the methods of treatment in use for a generation or more—do not and cannot achieve these results is proved by our skepticism and our pessimism. This quite universal state of mind would not exist today had these old-time methods been more fruitful of good results. Viewing the process of catarrhal deafness in this way, which, it must be admitted, is less technical than the way in which it is usually viewed, it is not difficult to see what folly the usual routine measures are. How foolish to try and overcome a tubal obstruction with mere inflation when the cause of the engorgement is the result of a general circulation that is below par, or to think that a few puffs of air every day or two will dissipate a congestion of the deeper tissues, as shown by the increased bone conduction. Yet how persistent and serious we have been in the application of this effort in such conditions. Again, we have never stopped to think that because of the disturbed nutrition there was in the drumhead a decided atrophic tendency and that in consequence the application of the instruments constructed on the principle of the Delstanche masseur resulted in the stretching of the membrane with consequent relaxation and aggravation of the deafness. What folly—indeed, how unscientific—is such a procedure!

The secret of success in the use of the Concusso-Masseur lies very largely in the proper use of the Eustachian catheter. Too great emphasis cannot be placed on this point. Unless the instrument lies in such position that the vibrations are sent directly into the tube and made to penetrate and be distinctly heard with the diagnostic tube, our efforts are largely if not altogether wasted. To be able to hear the inflation sounds is no proof that such an adjustment has been achieved. An air current backed up with 20 to 30 pounds pressure can be made to penetrate and be quite distinctly heard though it has to travel a tortuous course. With the milder vibrations of this instrument this is not the case. Here a perfect adjustment must be had. The direction of the beak of the catheter must be in direct line with the axis of the tube, and its tip must be in perfect apposition with the mouth of the tube, otherwise the desired effect is not obtained. A slight addition of air pressure is required in those cases where an obstruction exists. When the tube is open the vibrations are clearly heard without the extra pressure, providing the catheter is in proper position.

During eight months' service at Camp Fremont, Fort Snelling and Letterman General Hospital, an average of 25 cases were treated daily. The following are a few of the more typical. They furnish a fairly good basis on which to judge the merits of the instrument and method used in the treatment.

*Case I.*—December 30, 1918. Pvt. W. M., Med. Det.

O. M. C. C. since early childhood. Marked susceptibility to climatic changes. With each change of temperature aggravation of the catarrhal condition, especially the ear symptoms. Numerous attacks of O. M. C. A. durg his years. Drumsheads thick, retracted, lusterless. Eustachian tubes occluded, especially the right.

*Nose.*—Hyperplastic rhinitis, worse on the right side. A large nodule near posterior extremity of inferior turbinate, causing obstruction and making catheterization very difficult.

*Throat.*—General hyperemia. Tonsils moderately large.

Weber equal. Rinne with C, right minus 20, left minus 15. Rinne with C3, right minus 5, left minus 5. Hearing for watch, right contact, left contact. Hearing for whisper, right 6 inches, left 6 inches.

Daily treatments up to March 1, 1919, resulted in: Weber equal. Rinne with C, right minus 10, left minus 7. Rinne with C3, right plus 7, left plus 7. Hearing for watch, right 28/40, left 40/40. Hearing for whisper, right 18/20, left 20/20. Eustachian tubes well open and drumheads clearing.

Though the hearing is practically normal the prognosis is not altogether favorable owing to the fact that Rinne remains minus for the C fork. This shows an abnormal density of the deeper tissues, and this always means easy relapse.

*Case II.*—January 4, 1919. Pvt. R. Z., S. A. T. C.

O. M. P. A. accompanying epidemic influenza in November, 1918, involving the right only. Perforation in Shrapnell's membrane posterior to processus brevis. Through this protrudes a bleeding granular mass. Free flow of thick, yellow pus.

Drumhead red, thick, retracted and adherent. Eustachian tube occluded. Loud rales on inflation.

*Nose*.—Membrane slightly reddened, otherwise negative.

*Throat*.—Negative.

Weber right. Rinne with C minus 20. Rinne with C3 minus 10. Hearing for watch, contact. Hearing for whisper, 5/20.

Daily treatments up to January 30 resulted in: Weber only slightly to the right. Rinne with C plus 25. Rinne with C3 plus 25. Hearing for watch, 40/40. Hearing for whisper, 20/20. Ear dry, some retraction, periphery of drumhead slightly red, perforation nearly closed. Eustachian tube open and clear.

*Case III*.—January 7, 1919. Lieut. A. H. Y., M. G. Co., 127th Infantry.

Labyrinth concussion received in action on July 31, 1918. Unconscious for twelve hours. For a number of days thereafter mind was dull and orientation difficult. Complete loss of hearing in both ears except for the loud voice spoken directly into the ears.

Condition on entrance to my clinic was as follows: Drumheads retracted, lusterless. Eustachian tubes moderately open.

Weber equal. Rinne with C plus 10, left plus 10. Rinne with C3 plus 5, left plus 5. Hearing for watch, right 3/40, left 3/40. Hearing for whisper, right 6 inches, left 6 inches. Hearing for voice, right 2 feet, left 2 feet.

February 24, after 30 treatments: Weber equal. Rinne with C right plus 10, left plus 15. Rinne with C3, right plus 10, left plus 10. Hearing for watch, right 10/40, left 18/40. Hearing for whisper, right 2/20, left 4/20. Hearing for voice, right 15 feet, left 15 feet.

*Case IV*.—January 25, 1919. Lieut. M. V. T., Co. G, 355th Infantry.

O. M. P. A. in right in early childhood. Gunshot wound causing compound fracture of right mastoid process on November 8, 1918. Fullness and pressure in right ear has been constant ever since, with marked defect in the hearing. Right drumhead thin, retracted, calcareous deposit in posterior inferior quadrant. Left, dull white and slightly retracted. Right Eustachian tube occluded. Left open.

*Nose and throat*, negative.

Weber right. Rinne with C, right plus 5, left plus 10. Rinne with C3, right plus 10, left plus 15. Hearing for watch, right 6/40, left 18/40. Hearing for whisper, right 6/20, left 15/20.

Daily treatments up to February 8 resulted in: Weber equal. Rinne with C, right plus 10, left plus 15. Rinne with C3, right plus 20, left plus 25. Hearing for watch, right 40/40, left 40/40. Hearing for whisper, right 20/20, left 20/20.

*Case V*.—February 2, 1919. Pvt. W. McD., Co. H, 307th Infantry.

O. M. P. A. in right in childhood. Several months ago suppuration recurred following exposure to severe cold. Discharge lasted several weeks. Hearing has been defective since. Drumhead dull, retracted, adherent, cicatrix in posterior-inferior quadrant.

*Nose and Throat*, negative.

Weber right. Rinne with C minus 10. Rinne with C3 plus 20. Hearing for watch 20/40. Hearing for whisper 15/20.

Daily treatments up to February 8 resulted in: Weber equal. Rinne with C plus 18. Rinne with C3 plus 30. Hearing for watch 40/40. Hearing for whisper 20/20.

*Case VI*.—February 7, 1919. Pvt. C. C., Co. L, 360th Engineers.

O. M. P. C. biaural, for past eleven years. Exceedingly foul pus. Right drum-

head thick, red, retracted, adherent, large perforation in Shrapnell's membrane anterior to processus brevis. Left entirely destroyed below umbo. The remaining portion thick, red, retracted and adherent. Eustachian tubes well open.

*Nose*.—Simple chronic rhinitis; excessive discharge and post-nasal dropping.

*Throat*.—Uniform redness and puffiness of membranes.

Weber left. Rinne with C, right minus 10, left minus 18. Rinne with C3, right plus 5, left equal. Hearing for watch right 12/40 left 15/40. Hearing for whisper right 8/20, left 10/20.

Daily treatments up to March 7, resulted in: Weber equal. Rinne with C, right equal, left equal. Rinne with C3, right plus 10, left plus 10. Hearing for watch, right 24/40, left 30/40. Hearing for whisper, right 20/20, left 20/20. Right still discharging foul pus though not so freely. Left ear dry, drumhead clearing. Inner wall of middle ear less inflamed.

*Case VII*.—February 12, 1919. Pvt. A. C. K., Medical Detachment.

O. M. C. C. extending over a period of a number of years. Marked aggravation of the trouble during the winter months. Biaural O. M. P. A. in December, 1918. Marked defect in the hearing following this attack. Both drumheads thick, dull, retracted, adherent, cicatrix in each. Eustachian tubes occluded; loud râles on inflation.

*Nose*.—Septal spur on right side. General congestion of membrane. Excessive mucous secretion.

Weber left. Rinne with C, right minus 20, left minus 15. Rinne with C3, right equal, left equal. Hearing for watch, right contact, left contact. Hearing for whisper, right 2/20, left 2/20.

Daily treatments up to February 24 resulted in: Weber equal. Rinne with C, right plus 18, left plus 15. Rinne with C3, right plus 25, left plus 18. Hearing for watch, right 40/40, left 40/40. Hearing for whisper, right 20/20, left 20/20. Eustachian tubes clear and open. Drumheads clearing.

*Case VIII*.—March 2, 1919. Lieut. D. McD., Medical Corps.

Biaural O. M. C. C. of years standing. Epidemic influenza in November, 1918, which greatly aggravated the trouble. Drumheads present the usual signs of O. M. C. C. Eustachian only moderately open. Constant tinnitus, very distressing at night.

*Nose*.—Membrane dry, irritable with slight crusting on right side of septum.

*Throat*, negative.

Weber equal. Rinne with C, right minus 20, left 18. Rinne with C3, right plus 5, left equal. Hearing for watch, right 13/40, left 8/40. Hearing for whisper, right 10/20, left 6/20.

Daily treatments up to March 22 resulted in: Weber equal. Rinne with C, right minus 8, left minus 12. Rinne with C3, right plus 15, left plus 15. Hearing for watch, right 30/40, left 24/40. Hearing for whisper, right 18/20, left 15/20. Tinnitus only occasionally and then not severe.

*Case IX*.—March 6, 1919. Pvt. W. G., Co. G, 125th Infantry.

Tinnitus and defective hearing following labyrinth concussion received in action.

August 8, 1918.—Drumheads show signs of O. M. C. C., but patient declares never having had trouble with his ears. Tuning fork tests uncertain owing to the tinnitus. Eustachian tubes moderately occluded.

*Nose and Throat*, negative.

Hearing for watch, right 20/40, left 16/40. Hearing for whisper, right 12/20, left 12/20.

Daily treatments up to March 23 resulted in: Tinnitus unchanged. Hearing for watch, right 40/40, left 40/40. Hearing for whisper, right 20/20, left 20/20.

## MILITARY HYGIENE

BY A. L. BENEDICT, A.M., M.D., F.A.C.P.

SANITATION, including sanitary engineering and amynology (usually misterned "immunology") will be considered only incidentally, attention being given mainly to personal hygiene in its minor details. While originally appointed for gastro-enterologic service, the writer's experience was of a general medical nature, covering six stations.

The fact that impressed the writer most was the considerable morbidity of young male adults, contrary to the general conception of their relative resistance and in spite of:

1. The initial elimination of about 30 per cent of draftees for physical reasons and the further, quite prompt elimination of about 1 per cent for neuropathic reasons, 1 per cent for tuberculosis in the military sense, and of still others for various defects discovered or developing after enlistment, or the radical cure of various conditions such as hernia, chronic appendix inflammation and orthopedic defects.

2. Conditions usually considered as favoring health, such as outdoor life, physical exercise, early and regular if somewhat lengthy hours of labor, plain, abundant and usually quite good food, reduction of tea and coffee, almost complete elimination of alcohol and a use of tobacco that was very moderate, especially because mostly in the form of cigarettes, contrary to the common prejudice.

3. Efficient sanitary and amynologic procedures, prevention and cure of venereal diseases and general safeguards against infections in general.

In civil life, a medical clientele, including both sexes and all ages, of 600 in the recent past up to 700 at present, involves serious economic problems depending on relative lack of employment. In the Army the regimental or rather battalion assignment of surgeons corresponded to just about this clientele, to attend to trivial conditions or to render first aid for major conditions. The total provision of surgeons corresponded to a clientele of about 120, and of captains and lieutenants who were mainly the active practitioners of the Army to a clientele of about 200. In general these men were much busier than in civil life, and many were excessively so, at least for considerable periods, even excluding the direct effects of the influenza (?) epidemic. The difference cannot be entirely explained by paper work, routine attention to trivial conditions usually ignored in civil life, or even by the repeated precautionary physical examinations before and after change of stations and otherwise, as these were simply additions to the normal high standard of work required.

From another standpoint, even allowing for the necessary freer use

of hospital facilities, one would hardly expect a civilian community of both sexes and all ages equivalent to a division or other post of 20,000 to 30,000 troops, to have from 300 to 800 persons in a hospital (not considering the epidemic of 1918 nor the front), and to require a large hospital staff (30 to 75), including consultants, in addition to the routine regimental surgeons corresponding to the general practitioners. When we consider how largely a civilian hospital depends on obstetric, gynecologic and pediatric cases and those of either medical or surgical nature due to senility in the broad sense and the extent to which it serves out-lying population, the susceptibility of young male adults is still clearer.

So far as could be observed, the disease incidence was not due to the inclusion, as among Regular Army and National Guard troops, of men beyond the draft age. In fact, even among medical officers, it seemed that the general resistance of the older men was greater than that of the younger, with the sole exception of fatigue due to unusually severe physical exercise for which, of course, very few of the older men but many of the younger were fitted by recent engagement in athletics.

A corollary hygienic paradox is that the supposed benefits of outdoor life, at least so far as they represent a decided change of habits, have been exaggerated. This general statement was supported by quite diverse observations. For example, even discounting the danger of fire and the loss of efficiency from the long distances between buildings to diminish this danger, the discomforts and interference with diagnostic and therapeutic methods due to the occupation of wards before their completion, the danger of lodgement of bacteria on rough surfaces, etc., convenience in regard to transportation of patients and supplies, comfort of the staff, etc., the personal opinion was formed that, at least for hospitals, solidly constructed buildings of almost any kind should, in the event of a future military emergency, be commandeered in cities near camps instead of following the temporary construction adopted in the late war.

It was also observed that, whether in hospital wards, barracks or tents, excessive ventilation tended to its over-correction, while, even in summer, the air might become foul, especially with over-crowding, as often occurred.

Even healthy men in winter craved diffuse indoor warmth, the need being supplied almost entirely by extra-military philanthropic organizations.

The open-air or verandah treatment of pneumonia, etc., was usually justified. The general opinion of the profession and laity that exanthems are liable to complications—or to being “driven in,” as the laity express it—by chilling, did not seem to be supported. However, in

cold, damp weather, in extreme cases of pneumonia, etc., with accumulation of secretions, the writer is old-fashioned enough to plead for the luxury of dying in a warm room and even to believe that dry, diffuse warm air, allowing more general evaporation and emanation from the skin and favoring expectoration, might actually be life-saving. However, this attitude is largely due to the sad experience, as officer of the day, of four deaths under such circumstances in one night and the danger of being unduly impressed by definite experiences and coincidences is obvious.

One fact should be squarely faced, and it is one regarding which the writer has for many years experienced difficulty in dealing with patients over-impressed with the advantages of climate. With a few local exceptions such as Death Valley, not to be considered in strategy and military mobilization, there is no place in the United States where the matter of winter cold can be entirely ignored.

In spite of their undoubtedly infectiousness, diseases that could in any way be regarded as "colds" according to the old view, even including the pneumonias, measles, diphtheria, and influenza, either diagnosed clinically or bacteriologically in 1917-18 and the so-called influenza of 1918-19, corresponded in their maximum incidence to the cold season and to such climatic periods as the older critical though empiric observation had associated with similar conditions in the past. It should be remembered that this observation did not apply to continued, dry cold, but to fluctuations of temperature and the association of humidity. Undoubtedly, so far as minor local epidemics were concerned, cold was a factor largely on account of efforts to keep warm at the expense of ventilation and consequent contagion. However, it must be admitted that neither dust nor insects in warm weather produced the results of cold weather as a crude initial cause.

A particularly important source of colds was, as has long been known, chilling after perspiring. The military authorities soon recognized this fact and regulated the dress for drills accordingly, cautioned drillmasters not to keep men standing outdoors after drills, ordered change to dry underwear, and otherwise reduced this factor to a minimum. The routine wearing of blouses (coats) in overseas service seems to have been largely a matter of military esthetics, though partly due to a confusion of parallels of latitude with isotherms.

The exanthemata and, to some extent, other infections, especially those usually considered semelincident, occurred to a considerably greater degree among troops from the country. So far as the writer is aware, no concerted effort was made to determine, from military experience, the truth of the old conception of semelincidence, how far

exceptions are due to the expected failure of any general law and how far they are merely apparent and explained by incorrect histories or numbers of other human beings is due to active immunity, accidental previous or present diagnoses. It remains an open question, and one whose importance is not fully recognized, how far the conception of semelincidence is correct and whether, indeed, it represents anything more than a quantitative difference in immunity such as persists for a time after any infection. It has been implied rather than explicitly stated that the logical immunity of men constantly in contact with large but greatly increased by the law of chance according to the number of exposures, without actual development of any particular infection at any time. This is another important point on which we should not be biased by implications or general impressions and which ought to be established. It should be remembered that we are densely ignorant of the essential cause of the exanthemata. Practically all physicians would regard as absurd the contention that these diseases are, wholly or in part, different clinical manifestations of the same infection or of other infections not regarded as exanthematous; that there is no near approach to semelincidence but that the same person has repeated attacks of an infection, at one time diagnosed as scarlet fever, at another as measles, again as German measles or as some skin affection; that, occasionally, there is a repetition of the disease in the same clinical form, usually interpreted as a rare exception to the law of semelincidence. Yet it would be difficult to argue on a scientific basis against such an extreme view nor is the latter essentially more absurd than the general reaction against the quondam acceptance of a "fourth disease."

Military experience has probably popularized the conception that the so-called children's diseases are such only because any disease or any other experience which is extremely likely to involve any human being will, by the law of chance, occur early in life. Even physicians are prone to forget that smallpox, until well controlled by vaccination and rendered so rare that only adults would usually come in contact with it, was just as much a children's disease as scarlet fever or measles. In particular, the childish idea that there is anything unmanly in contracting a so-called children's disease has almost disappeared.

Two prevalent ideas about the exanthems seem to have been disproved by military experience: that they are exceptionally severe in adults and that they are, to any specific degree, rendered more dangerous by exposure to cold.

Whether the various methods of attacking the venereal problem—root, branch and soil—are applicable to civil life is an open question. Some have gone so far as to raise the ethical question as to the pro-

priety of a free country introducing coercive measures even to accomplish a moral purpose, in regard to sexuality, alcoholic indulgence or anything else. Very few Americans realize how much aerothermia there is about our personal liberty. No densely populated country can give more than about so much freedom of individual action and, as a matter of fact, at the time the war began in Europe, the United States gave considerably less than most other civilized countries, whatever their form of government.

The somewhat cynical opinion may be expressed that a considerable degree of the ultimate, supposedly moral factor in the low venereal incidence of the Army was due to the fact that the soldier was too busy, too tired and too depressed by discipline to be excessively amorous. Anaphrodisiac medication by way of coffee was frequently charged, but the more conservative opinion was that this beverage represented a sin of omission rather than commission.

*Post facto* prophylaxis of venereal infections—really abortive treatment—proved itself a valuable aid, not to be set aside as itself immoral. Its failures were largely due to the perfunctory way in which it was accepted, and it is difficult to see how such failures can be prevented. Some men reported just often enough to escape the results of court-martial if infected by intermediate exposures, others near the time limit of efficiency, while others avoided it as a courtesy to their female companions.

The pessimistic view held by many physicians as to the therapeutics of venereal diseases was disproved by statistics.

It would be a very low viewpoint, however, which does not enable one to discern that the low military incidence of venereal infections was largely due to a high moral tone and to a high degree of patriotism to keep oneself fit for service, even in the absence of abstract sexual morality.

The psychic depression of military discipline manifested itself in many ways apart from the venereal problem. How far the ordinary standards of personal association in a democratic country must be changed for military purposes and the degree to which the Regular Army objection to the National Guard depended on fighting qualities and adaptability to actual military work need not be discussed here. The fact remains that, quite aside from the physical fatigue of the military work itself, the majority of men from civil life, whether privates or officers, were depressed or irritated by military discipline itself. Early in the war, quite a good many medical officers felt that, if long continued, the psychic strain plus the actual excess of work over civilian standards would cause a general demoralization and that the psychic condition of the soldier

would reduce his fighting value. Fortunately this apprehension was not fulfilled. It may even be doubted whether its nonfulfillment was due to the comparatively short duration of the actual hostilities for this country or to the relaxation of discipline overseas which is generally admitted. Probably the average human being can adapt himself to such a change of status as well as to purely physical differences in environment.

Almost unanimously, though for the most part good-naturedly, there was complaint directed not so much at the long hours of work and the actual stress of the work itself as at the period of the 24-hour cycle in which it was done. The writer confesses himself fully sympathetic with this complaint. Getting up early was, both in anticipation and realization, the worst horror of war up to the actual front. Why this is so, why large numbers of the people should, after artificially—one might almost say fraudulently—securing the delights of evening daylight belonging naturally to higher latitudes, demand legislation to set the clocks forward instead of rationally and individually starting their day at an honestly early hour is a puzzling fact.

A personal confession of a less general and apparently rather uncommon psychic state may also be made. A moderate degree of discomfort was experienced, as had been noted occasionally in civil life, merely from the fact of being in the country. The most pleasant, though really the hardest service of the writer was in New York City. Literature abounds with allusions to and dissertations on the psychic benefits of more or less uninhabited areas. Personally, exactly the opposite holds good, though not to the exclusion of an enjoyment of natural beauties and phenomena for a reasonably brief period. While this preference has never manifested itself in any extreme degree, it suggests that there may be encountered distinct philias and phobias with regard to city and country life.

Nostalgia is a recognized condition, even in military medical nomenclature, which seems to the surgeon recently from civil practice reluctant to let him call a disease by the diagnostic term which he would naturally use. The writer happened never to encounter nor even hear of a definite case of pathologic homesickness. Moderate degrees were, of course, common and usually frankly admitted. The wholesome disposition to share perfectly laudable attachments to families and home interests generally probably prevented the development of neurotic degrees of nostalgia.

*Clothing.*—Generally speaking, the uniform was nearly ideal as to comfort, against either cold or heat, durable, easily kept presentable, economic and convenient in regard to rapidity of dressing. Exceptions were mainly due to misfits, occasional poor quality and arbitrary orders

as to the exact uniform to be worn, applying rather to enlisted men than officers. Without being qualified to speak of service in the trenches or outdoors in bad weather (excepting ordinary cold spells and rain in training camp), the writer found no need to use woolen socks or underwear or any of the special knitted goods. In view of the enormous expenditure of time and the economic disturbances dependent on the production of sweaters by patriotic women, the question may be raised whether they were really superior to ordinary underwear. The writer found the most satisfactory solution of the problem of undergarments to be thin cotton pajamas for hot weather, flannelette pajamas for cool weather, and the same over heavy cotton shirt and drawers for cold weather.

While rubber boots were at times necessary, they are obviously ill-adapted to marching, and a strictly waterproof leather shoe that can be used for dress purposes seems to be a myth. Leather boots are expensive and heavy, little better than shoes for mud, and, indeed, seem to be needed mainly because properly associated with spurs, whose usefulness on parade and at dances is indisputable. The sensible solution of the problem of footwear would seem to be the official recognition of the rubber storm overshoe for moderate degrees of rain and mud and the development of a light, waterproof device somewhat resembling an arctic rubber.

The canvas legging of enlisted men is a useful article, but the leather puttee of officers is hot in summer, an impediment in walking and leaping over obstacles, easily damaged by brushes and rocks which theoretically demand leg protection, and affording no protection against deep mud. The spiral puttee is really more serviceable. A rational solution of the problem is to modify the tailoring of the breeches so that they will join neatly with the shoe tops, dispense with the puttee altogether as a part of the regulation dress, and use canvas leggings or some form of rubber boot or high waterproof shoe as suggested above, simply for protection against water and mud.

As a matter of convenience rather than of hygiene, the breeches should be made so that they could be changed without removing the shoes, instead of rendering the soldier "obligately proteropantic."

There has been a good deal of agitation favoring the English turned-over coat collar and open front blouse. Personally the writer prefers the present style of uniform partly because it affords better protection in cool or cold weather, the regulation flannel or cotton shirt amply providing for hot weather, partly because it reduces the problem of the laundry to cuffs and collars, the latter, held by snaps within the blouse collar, reducing the time of dressing materially. When liable to sudden changes of station, the elimination of the (visible) shirt is an extremely practical

matter. On the other hand, the overcoat should be modified so that it may be worn open at the throat in moderate weather, without presenting an unsoldierly appearance. That this is not a trivial point may be shown by the fact that it was no uncommon matter to have special police regulations or even specially designated police at camps, to compel men to button their overcoats. So general a violation of regulations indicates a real demand, whose hygienic basis is obvious.

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ANNUAL MEETING OF THE ASSOCIATION WILL BE HELD  
IN NEW ORLEANS, APRIL 22d, 23 and 24. MEETING OF THE  
A. M. A. BEGINS APRIL 26. BEAR THIS IN MIND.

# OBSERVATIONS ON CASES OF SEASONAL HAY-FEVER DIAGNOSED AND TREATED WITH POLLEN EXTRACTS<sup>1</sup>

BY CAPTAIN W. C. WILLIAMS

*Sanitary Corps, United States Army*

DURING the month of August, 1919, it was decided to make an effort to diagnose and treat fall hay-fever, with a view to determining the specificity and efficacy of the cutaneous tests for sensitiveness to plant pollens and the amount of relief that could be expected in the treatment of this condition with the extract of the particular pollen responsible for the symptoms.

It was well understood at this time that the opinion of workers in this field was practically unanimous that the greatest relief was to be expected from a prophylactic rather than from a curative standpoint and that the process of desensitization was more effective when started before the commencement of the hay-fever season than during an attack. It is to be regretted that we were unable to study the preliminary desensitization of any patients and that the only cases that we saw were those who had applied to the attending surgeon for relief after the development of well-marked hay-fever symptoms.

Bearing in mind the above facts, the results obtained at the Army Medical School are not to be taken as a final criterion of the value of pollen extracts in the prophylactic desensitization of persons subject to seasonal hay-fever and are presented only as a matter of general interest.

In all cases diagnosed, the simple cutaneous test was used, with pollen extracts obtained from a reliable commercial house. A slight abrasion is made on the flexor surface of the forearm for each pollen to be used and one for a control. These may be made with an ordinary needle or with a Von Pirquet borer, the abrasion being not over one-eighth inch in length and preferably not drawing blood. A drop of pollen extract is placed on each abrasion, while the control receives a drop of dilute alcohol in saline. A careful diagram should be made beforehand showing the distribution of the extracts to the abrasions. If rapid drying takes place the spot may be moistened with another drop of the extract. In positive cases a distinct reaction takes place usually within ten minutes and is seldom delayed later than twenty minutes. An urticarial wheal and more or less hyperemia rapidly develops at the site of the abrasion to which has been added the particular pollen to which the patient is sensitive. The control, naturally, shows no wheal and only a slight redness due to the irritation of the scarification. The

<sup>1</sup> Department of Seratology, Army Medical School, Washington, D. C.

treatments were carried out with graduated dilutions of the specific pollen extract, as determined by the cutaneous tests.

A total of 29 patients was seen from the time that we were in a position to diagnose, and make an effort to treat, fall hay-fever (August 15) until the last patient had cleared up with the advent of cool weather (October 10). Of these 29 people eight came in for diagnosis only and were not treated, while 21 were diagnosed and received a varying number of treatments.

The cases were diagnosed as sensitive to either ragweed or goldenrod pollen as follows:

Ragweed.....	22 or 81.4% of cases diagnosed.
Goldenrod.....	5 or 18.5% of cases diagnosed.
No reaction.....	<u>2</u>
Total.....	<u>29</u>

Of the cases failing to give any reaction one cleared up rapidly under treatment for bronchitis, while the other was not heard from again. Both cases were probably "colds" instead of true hay-fever.

*Ragweed Cases.*—The 22 cases of ragweed sensitiveness were divided as follows:

For diagnosis only.....	6
1 or 2 treatments only.....	4
Treated cases.....	<u>12</u>

The cases "for diagnosis only" need no remark, as they merely came in to find out which pollen they were sensitive to. Of the four cases receiving insufficient treatment but one is of interest, the other three being discharged or leaving the city. The one case in this group that is of interest, "Captain X," received a diagnostic skin test on August 25, followed by the smallest injection ordinarily given (0.1 c.c. of a 1 to 10,000 dilution). On August 27 the attending surgeon informed us that the patient claimed to have had an extremely severe reaction, with accentuation of eye and nose symptoms and great distress in breathing.

Of the remaining twelve treated cases, all received regular treatments of graduated dosage. Not a single one of the twelve patients showed any marked or, in fact, noticeable improvement or alleviation of symptoms until the advent of cooler weather and the end of the pollen season. One case, in spite of strenuous efforts to control it, progressed so rapidly and so severely that the patient was forced to leave the city for a prolonged sea voyage in order to obtain relief. Two of the cases stated that they felt a little easier after the injections, but this was not constant or permanent.

The results with the ragweed pollen extract as a therapeutic measure could not be considered encouraging. However, these patients were all requested to report next spring or early summer for a course of desen-

sitizing treatments, to be completed before the commencement of the fall hay-fever season.

*Goldenrod Cases.*—An analysis of the five goldenrod patients shows that one case came in "for diagnosis only"; one had a very severe reaction following the first injection (0.1 c.c. of a 1-10,000 dilution), including increased asthma and some of the typical signs of hay-fever which she had never had before; while three cases received from three to six injections. The case with the severe reaction received, six days later, a diminished dose of 0.1 c.c. of a 1-20,000 dilution, but unfortunately did not return or inform us of the reaction following the second injection. It was later understood that she had left the city shortly after the second injection.

Of the three remaining cases, one received three injections with a remarkable improvement of both local and generalized symptoms, commencing after the first treatment and with all symptoms entirely subsiding after the third injection. The other two cases each received six treatments with a gradual but complete subsidence of all symptoms. It is of course possible that this may have been due to the change in the weather and the elimination of the pollen, as the final treatment was given one case on the 26th of September and the other case on the 30th of September.

The use of the extracts of goldenrod pollen gave manifestly better results than the ragweed pollen extracts. Although the series of cases was smaller and the treatments started slightly later in the season, introducing the uncertain element of the weather influence, it was felt that the patients received a distinct benefit from the treatments.

*Summary.*—(1) Of 27 cases of hay-fever diagnosed, 81.4 per cent were due to a sensitiveness to the pollen of the ragweed, while 18.5 per cent were due to a similar sensitiveness to goldenrod pollen.

2. The diagnostic cutaneous reaction offers a simple and clear-cut method of determining sensitiveness to pollen proteins.

3. Treatment with the extract of the ragweed pollen did not appear to have any favorable influence upon the course of the disease or the severity of the symptoms in twelve cases treated.

4. Treatment with the goldenrod pollen extracts in three cases was apparently beneficial in two cases and markedly so in one particular cases.

Any method of diagnosis or treatment that will offer a suggestion of relief to the vast army of sufferers from this really serious condition should be given a thorough and conscientious trial. It is hoped that we will be able to try the effects of early desensitization upon many of the same patients before the commencement of the autumnal hay-fever season this year.

## EDITORIAL

### SIR WILLIAM OSLER (1849-1919)

The untimely death of Sir William Osler on December 29, 1919, at his home at Norham Gardens, Oxford, leaves a distinct void in the minds and hearts of hundreds of his professional colleagues, whom he had attached to himself by the charm, worth and distinction of his personality. As Regius Professor of Oxford, having the closest affiliations with Canada, the United States and the mother country, he was, in a sense, the great liaison officer of the Anglo-Saxon profession, and through the fact that as a senior consultant to the British force, he was a colonel in the R. A. M. C., rendering endless service on committees and in hospitals in the treatment of the sick and wounded, his kindness and hospitality to American officers in England during the war period, as recorded by Colonel Winter, will always be held in remembrance.

Osler was easily the leading physician of the English-speaking world, in other words, the teacher and inspirer as well as the writer, investigator, and actual practitioner of his profession. His book on "Practice," which displaced that of Sir Thomas Watson and has been translated into four foreign languages, is in every physician's library. A recent bibliography of his medical writings numbers 730 items, dealing with all aspects of internal and hospital medicine and medical history. As with so many eminent English physicians, Osler's most original scientific work, such as his discovery of the blood platelets, of the erythematous spots in endocarditis, of chronic cyanosis with polycythemia, was in the province of the circulation, which has been a kind of English specialty from Harvey's time down to the epoch-making work of Gaskell and the Cambridge Laboratory. Osler was a profound student of aneurism, endocarditis, tuberculosis, typhoid fever, but there are few aspects of inner medicine which he did not touch upon.

He was well-born, with the education of an English clergyman's son, capable of discussing the minutiae of Greek philosophy, with the learned Thebans of the high table, and, with such training, rose to the top of his profession by hard work, sans strenuousness. He came of a family whose sons, his brothers, all attained to high worldly place in Canada, and he had nothing whatever in his composition of the man who is hard and supercilious because his own rise in life was a matter of hard knocks. A kindlier, more whole-souled gentleman never lived. His humor was the essentially English humor of Ben Jonson's classic definition—now holding burlesque high court with some visiting prima donna of the

profession, now hoaxing a medical society with a supposititious surgical case, now filing a brief for the soft-nosed chaps at a dinner made up mainly of the "fierce beaks of natures aquiline," now chaffing a whole, thin-skinned and easily guillible nation with what was nothing more than the old army prescription of retiring (sive "chloroforming") men in their sixties.

Osler's affiliation with the Medical Corps of the United States Army, to which Col. F. A. Winter has left such an eloquent tribute in the *envoy* of the Osler Anniversary Volumes, began with his early friendship with Billings and Fletcher. He once lost a library book in the street car. It was Billing's humor that he would never lend him another. This Osler became a frequent guest at the Surgeon General's Library where his warm and friendly personality soon made him known to the whole force, for anyone of whom he might, as he passed, have some pleasant or encouraging word. At the Army Medical Museum on February 28, 1894, he delivered his eloquent address on William Beaumont, which, with the well-known paper of Vaughan, did most to establish the definite position of Beaumont in the history of physiology. This paper contains perhaps the best advise ever rendered to young medical officers on the chances of doing scientific work at isolated military posts. The collection and cataloguing of the historical classics in the Surgeon General's Library and their preservation under glass were carried forward under direction of the then librarian (General McCaw) at Dr. Osler's suggestion. No other physician has done so much to inculcate the use and value of the Index Catalogue among his fellows and pupils at home and abroad. It was through his influence that volunteer hospital units from the United States went overseas to serve with the British in France in 1915. During the great war the pleasant retreat at Norham Gardens became a kind of Mecca for medical offices of the United State Army and Navy passing through England. No ordinary man could have inspired such nation-wide esteem and regard. In September, 1917, Sir William Osler's only son, a young lieutenant of artillery, and through his mother, a greatgrandson of Paul Revere, was mortally wounded in action in the Ypres salient and died shortly after. This grave loss was bravely borne by the great physician so long as his own activities with the sick and wounded kept his mind occupied. But the war over, it became obvious to his friends that a break in his health had occurred, and he actually met his death in line of duty, through pneumonia contracted by exposure in motoring back from Glasgow, whither he had gone to see a patient in consultation. THE MILITARY SURGEON begs to express its deep sympathy with Lady Osler in her loss, which is also a sad and grave loss to the whole medical profession.

**JOHN VAN R. HOFF**

In the death of Col. John Van R. Hoff, Medical Corps, U. S. Army, Retired, that service has lost one of its oldest officers and one of the best known in the service.

Colonel Hoff was born in New York State on April 11, 1848, and after his graduation in medicine served at Omaha Barracks, Neb., as acting assistant surgeon, until November 12 of the same year, when he accepted appointment as Assistant Surgeon in the Medical Department of the Army and reported for duty on the 15th of November, 1874. During the years from 1874 until 1879 his service was on the Western Frontier, and he served during this period at Fort Sanders, Wyoming, Fort McPherson, Neb., and Fort Fetterman in Wyoming Territory.

In 1879 he was relieved from duty in the Department of the Platte and ordered to New York City, where, after examination, he was promoted to the grade of captain and served in the east at Fort Monroe, Va. In 1882 he was ordered to the Department of California and assigned as post surgeon at Alcatraz Islands, where he served until 1884, then relieving Surgeon George M. Sternburg at Fort Mason in the same state. In 1886 he was relieved from duty at Fort Mason and ordered to report to Fort Leavenworth, Kansas. During this year and 1887 he was on leave abroad and on his return was assigned to duty at Fort Reno, Indian Territory. After this he took station as post surgeon at Fort Riley, Kansas, during which period he spent considerable time with troops in the field. In 1890 he was ordered from this duty. On November 23 he took the field with eight troops of the 7th Cavalry and Light Battery E of the 1st Artillery, in camp at the Pine Ridge Agency, South Dakota, and was on duty with them from that time up to and through the fight with the Big Foot band on Wounded Knee Creek on December 29 and 30 and at White Clay Creek on December 30 of the same year.

During this Indian outbreak he conducted himself with marked gallantry in the performance of his duties as surgeon, and this is entirely evident from the fact that a General Order was published from the Headquarters of the Army recommending officers who had shown gallantry at various times during that year. This is General Order No. 100, H. Q. A., A. G. O., December 17, 1891, and begins—

The Major General Commanding takes pleasure in publishing in orders to the Army the names of the following officers and enlisted men who, during the year 1890 and in the recent campaign in South Dakota, distinguished themselves by "specially meritorious conduct in service."

In the body of this General Order is the following citation in respect to Colonel Hoff:

December 29 and 30, 1890. Major John Van R. Hoff, Surgeon (then Assistant Surgeon), U. S. Army: for conspicuous bravery and coolness under fire in caring for the wounded in action against hostile Sioux Indians, at Wounded Knee Creek, South Dakota, on the 29th, and near the Catholic Mission, at White Clay Creek, on the 30th.

As an evidence of the fact that service on the frontier at that time was not a sinecure, it may be mentioned that immediately on his return to Fort Riley from this duty he was ordered to proceed to the camp near Florence, Kansas, to care for those of the 2d Battalion of the 7th Cavalry and Light Battery E, 1st Artillery, and of Light Battery F of the 4th Artillery, who had been injured in a railroad accident at that point.

On June 15, 1890, he was promoted to the grade of major. In July, 1892, while on duty at Fort Riley, by special request of Governor R. E. Pattison of Pennsylvania, he accompanied him on a tour of inspection of the camps of the National Guard of Pennsylvania.

In the same year he was relieved from duty at Fort Riley and ordered to report to Fort Columbus, New York, for duty. In September, 1893, while on duty in New York Harbor, he was appointed a representative of the Medical Department of the Army to accompany the foreign delegates of the Pan-American Medical Congress to Boston, Saratoga, Niagara, Detroit, Cincinnati, and Chicago.

In 1896 Colonel Hoff was appointed a member of a board of officers to meet at David's Island, New York, for the purpose of revising drill regulations for the Hospital Corps of the Army.

In 1896, after his completion of his tour of duty in the East, he served at Vancouver Barracks, Washington.

In 1898 Colonel Hoff left Vancouver Barracks in compliance with orders and reported to the Surgeon General at Washington, where he was commissioned as lieutenant colonel of volunteers as of date of May 12. He was announced as chief surgeon of the Third Army Corps and served at Chickamauga Park, where he was on various duties, including that of chief surgeon of the Third Army Corps. On September 21 he was relieved from duty and on October 19 sailed for San Juan, P. R., as chief surgeon.

July 24, 1900, he was relieved from duty as chief surgeon of the Department of Porto Rico and ordered to report in person to the Surgeon General of the Army at Washington and sent by him to Peking, China, to report to Maj. Gen. Adna R. Chaffee, who was in command of the United States forces in China, for duty as chief surgeon on his staff. After completion of this duty he served as chief surgeon of the Department of the Lakes with headquarters in Chicago. After a

short tour there he was relieved from duty and ordered to report to the Surgeon General in Washington for duty in his office.

In 1902 he was promoted to the grade of lieutenant colonel and was appointed member of the board of officers to meet in March of that year for the purpose of considering the subject of modification of uniform equipment of officers and men in general.

November, 1902, he was ordered to duty at Fort Leavenworth, Kansas. His services at Fort Leavenworth continued until May, 1905, when he was designated by the Secretary of War as an observer with the Russians in the Russo-Japanese War and directed to report to St. Petersburg in line of this duty. On November 11 he returned to the United States. On completion of his duty in Washington writing his report of experiences as observer of the Russian Army, he was relieved from duty at Fort Leavenworth and sent to Omaha as chief surgeon of the Department of the Missouri.

December 3, 1906, he reported at Manila, P. I., as chief surgeon of the Luzon. He served in the Philippines until December, 1908, when he was relieved from that duty and returned to the United States.

In 1909 he reported as chief surgeon of the Department of the Lakes with headquarters in Chicago. December, 1909, he was transferred to the Department of the East as chief surgeon, with headquarters at Governors Island, where he served until the time of his retirement, April 11, 1912.

This record of Colonel Hoff's service will make it plain to all who read it that the many years he gave to his country were active years, filled with important duties and with a record of things well done.

His passing will be a cause of sorrow to very many, not only in the Army of which he formed so distinguished a member, but many in other services and to the countless friends whom he made in his life amongst those whose duties lay in civilian life. He was a man of much natural charm, of pleasant address, and, withal, of a dignity which well became his erect bearing and soldierly appearance.

He gave his best to the service of his choice, and it was due to the direction of the efforts of his able mind that many changes, and always changes for the better, were made in respect to the organization of the Medical Corps which he saw grow up and develop from its more simple predecessor, the Medical Department. There are many in the Army Medical Corps now who remember him with affection on account of his personal traits and who also remember him with gratitude, because, through his wise counsel and sober advice, they profited much in the learning of the profession of military medicine.

Colonel Hoff's service, as a younger man, on the western frontier

carried with it commendation for his personal bravery and devotion to duty at Pine Ridge, as has been evidenced by the quotation of the order of the general in command.

His work at Porto Rico, notably in the eradication of smallpox in that island, met with universal commendation as did his orderly arrangement of medical affairs in that department. He was known in Washington for his ability as an organizer and an administrator, and played no unimportant part on the board which was charged with the changes in the uniform.

These are only the salient points in his career, and it is difficult, in a life so full of accomplishments, to choose for particular commendation any one thing.

Those who knew him, those who had the privilege of his acquaintance, of his friendship, those who knew the honorable record which stretched behind him as far as the limit of his life, feel that all that he did might be summed up in the words of the Master, "Well done, thou good and faithful servant."

JAMES ROBB CHURCH.



## ASSOCIATION NOTES

At a meeting of the Executive Council of The Association of Military Surgeons, January 6, 1920, the following names were proposed and elected to membership in The Association:

### Medical Corps, U. S. Army

#### *Colonels*

Charles Y. Brownlee  
Harold W. Jones  
John S. Lambie  
Louis B. Wilson

#### *Lieutenant Colonels*

Harry R. Beery  
John W. Meehan

#### *Majors*

Herbert A. Durham  
Francis E. Fronczak  
Walter B. Harvey  
Frederick K. Herpel  
Mark D. Hoyt  
Fritz C. Hyde  
John P. Jones  
Frederick Knowles  
George D. Marshall  
Pleasant P. Nesbitt  
Charles B. Palmer  
Edward W. Peterson  
Prince E. Sawyer  
Edward A. Sharp  
Francis E. Shine  
Joseph S. Wheelwright

#### *Captains*

Edward McP. Armstrong  
John W. Balke  
William M. Blair  
Frank E. Boston  
Carl S. Bungart  
William A. Burns  
Joseph H. Chiles  
Kemper L. Colley  
Amplias W. Davis  
Homer D. Dudley  
Anfin Egdahl  
William P. Evans  
Lloyd H. Fochtman  
Omer O. Gain

### *Captains—Continued.*

Philip P. Green  
Joseph M. Hancock  
Henry O. Hagen  
Paul T. Hurt  
Robert M. Jones  
Ray Kessel  
Harry W. Kinne  
Philip Lewin  
Leonard J. Loewe  
Alexander M. Macaulay  
John E. Manney  
Otis Martin  
Wesley S. Neal  
Carroll D. Parsons  
Erling O. Ravn  
Claude N. Rucker  
Henry T. Schiffley  
Omar H. Shively  
Walter D. Simmons  
Joseph S. Smeal  
James J. Snipes  
George E. Sutton  
Herbert G. Vaughan  
Samuel E. Weiner

### *First Lieutenants*

Charles H. Allen  
Harry A. D. Baer  
Joseph H. Baker  
Lewis K. Eastman  
Wellington D. Griesemer  
Raymond C. Jones  
John C. Kibler  
Eugene L. Laurence  
Harry H. Lawrence  
Frank H. Mervis  
Joseph T. Meyer  
W. Leland Mitchell  
Homer F. Moore  
Lester D. Riggs  
Michael Sarla  
Emile C. Schulze

*First Lieutenants—Continued.*

Theron H. Slaughter  
 Dallas Southard  
 Harve B. Spangler  
 Steven F. Weygandt

**Medical Reserve Corps, U. S. A.**  
*Colonels*

Astley P. C. Ashhurst  
 William LeRoy Dunn

*Lieutenant Colonels*

W. H. Bergtold  
 Dudley S. Conley

*Majors*

Robert W. Brace  
 Byron B. Colvin  
 Alfred W. Duff  
 Jay D. Dunshoe  
 Frederick F. Miller  
 Charles P. Gray  
 James Hamilton, Jr.  
 Orrie I. Hetsler  
 Allen L. Lear  
 Addison L. Lincecum  
 Frank H. McGregor  
 Houston H. Parsons  
 Ira Lee Parsons  
 Clement D. Smedley  
 Clarence G. Toland  
 Tullie Van Boyd  
 Lee W. Wiggins

**Medical Reserve Corps, U. S. A.***Captains*

Herbert M. Bergamini  
 James H. Huddleson, Jr.

*Captains—Continued.*

John A. Johnson  
 Elisha H. Jones  
 Henry W. A. Lee  
 Gebhard J. Long, Jr.  
 Frederick Wm. Schaeffer  
 P. F. Southwick  
 John Swancott  
 Timothy C. Weber

*First Lieutenants*

Walter M. Caton  
 Anthony J. Font  
**Medical Corps, U. S. Navy**

*Lieutenant*

Saverio A. De Yoanna

**Medical Corps, U. S. N. R. F.***Lieutenants*

Wm. A. Doebele  
 Ferdinand M. Smith

**Medical Corps, Natl. Guard, U. S.**

Capt. Charles S. Kubik

First Lieut. Lloyd B. Whitman

**Associate Members**

Pharmacist Wm. C. Dale, M. C., U. S. N.  
 Major Gerald D. Byrne, D. C., U. S. A.  
 Major Arnett P. Matthews, D. C., U. S. A.  
 Lieut. Col. Wm. H. Goodwin, M.C., U.S.A.  
 Major Murray S. Danforth, M. C., U. S. A.  
 Capt. Charles H. Marcy, M. C., U. S. A.  
 Capt. Richard A. Roach, M. C., U. S. A.  
 1st Lt. Chas. W. Finnerty, M. C., U. S. A.  
 1st Lt. Clarence B. Livingston, M.C., U.S.A.  
 Maj. C. G. Berardinelli, M. R. C., U. S. A.  
 Maj. Geo. F. Glass, M. R. C., U. S. A.



## COMMENT AND CRITICISM

### SOME PROBLEMS FACING THE T. B. EXPERT IN FRANCE

In dealing with pulmonary conditions it is necessary for those of us with experience in France to view them from a slightly different angle to what we were formerly accustomed to do in civil practice.

The cardiovascular expert now determines whether or not a man can carry on, not alone by the auscultatory method but also by trying him out and seeing just exactly what his heart is capable of doing upon exertion. Because he has a murmur is no reason why he should be discharged as unfit, for we have all seen just such individuals carry on through a strenuous life without apparent discomfort. In like manner certain types of chest pathology should not be the sole cause for disqualification.

A subterfuge is very often sought as cause for exemption, as those who have had to deal with draft troops well know. Just so, after reaching France, some cause for disqualification and return home becomes the fixed idea of a certain class of men.

To make things more difficult, the medical man often takes the easiest road for sending back a soldier who seemingly is unfit for duty, either physically or temperamentally; and upon whom a definite diagnosis cannot be made. And so he is tagged as "observation T. B." and returned.

Thus it is that the T. B. centers become filled to overflowing with all sorts of cases, some of whom have chest pathology, but the larger proportion without any tubercular infection.

The conditions, as we see them, can be divided into three classes: First, the moderately or far advanced cases; second, the incipient and by far the smallest class; third, catarrhal conditions which are non-tubercular. It is the third class that we find for many reasons the most difficult to dispose of.

It may take a period of months for a chest to completely clear up (in this damp climate), following a bronchitis or pneumonia, and during this time there is no reason why, under the circumstances, the man cannot be in an organization and on active duty, especially in the S. O. S. or even in the lines, if he is otherwise fit. The soldier has become more or less hospitalized, due to his stay or rather passage from hospital to hospital, and, what is more to the point, has learned the various symptoms of the disease of which he is a supposed victim. From a cough which he may originally have had, or may still have, he gradually passes through the cycle to where an hemoptysis and considerable loss of weight is a

mere "bag of tell." Furthermore, having perhaps had a taste of fighting, the farther he gets from his organization the more anxious he is to take the first boat for home.

At this point I may say that the history, which ordinarily in practice at home bears a very large part in the early diagnosis of T. B., in the Army has to be absolutely disregarded. The reasons are obvious, depending upon whether the man wants to return to his outfit or be invalided home, how he states his case and answers the questions put to him. The sputum examination, which ordinarily is considered proof positive, in a few cases counts for nothing. We have had men exchange sputum cups or sputum, and only after careful watching were we able to confirm our suspicions. One method employed by us was to transfer the patient to another ward or a different hospital in the center and, while there, have repeated specimens examined. Another was to put a few drops of phenol hydrazin in all the cups of the positive cases, after sterilization, and test the sputum of the suspected case for this. This proved invaluable to us, and several cases were detected in this manner.

A man with a few indefinite signs in his chest, which as far as can be discerned are non-tubercular, is perhaps classified and sent to a re-training camp. He suddenly gives a history of blood spitting or of excessive fatigue or of cough, and appears at sick call. The result is obvious, and in view of his history and examination he is once more a patient in the nearest hospital and perhaps gradually once more travels back toward the base. Each time when rumor reaches him that he may be returned to duty, his symptoms are aggravated, and so the surgeon, not wishing to make a mistake, passes him along.

So the problem is narrowed down to training the individual in as short a time as possible and endeavoring to clear up the chest condition, whatever it may be, and render him physically fit before sending him on his way.

We have endeavored to study the problem from all angles: First, the retraining or convalescent camp, but found a certain number of repeaters; then the reclassification camp, with a like result; and so we turned to and began retraining the men while still under our immediate supervision, beginning as soon as possible after admission to the hospital (when there was no discernible lesion in the chest). In this way very little time is lost, and there is not that more or less prolonged period of inactivity which usually accompanies the observation of T. B. cases. Those men who will eventually return to duty—and we have a goodly proportion—are not allowed to soften up and get out of trim, but are kept in shape by various methods of exercises. Of course we find that we have, in our classes, men who have some activity and who have to be returned to the

States. However, I do not feel that we have done them any injury, as perhaps a small amount of exercise was all that was required to stir up their process, causing a slight rise in temperature and accentuation of their signs, thus giving us the picture that the medical man who first saw the patient had. So in a doubtful case, time, which is valuable both to the patient, whose speedy return home is essential, and to the Government, which is constantly calling for empty beds, is saved.

As we well know, fever occupies one of the most important places from a diagnostic point of view. It gives one of the earliest evidences of activity, and in no other disease do such relatively small differences in temperature possess such importance. So in afebrile cases it is possible to disclose an otherwise hidden temperature by exercise.

We did not stop at a three-day record, but kept up the temperature records as long as the patient remained with us. A chart procured in this way—and a slight rise in temperature might be overlooked if the patient were kept quiet—lends valuable aid to diagnosis in an obscure case, especially when time is such an important factor to be considered.

First a truck garden was started, which method brought fairly good results, and the general morale of the camp certainly was much improved. It kept the men out of doors, besides getting their minds off their condition. A certain proportion gained in weight, and we noticed a marked increase in the "chow line." After keeping this up for several months we decided to change our plan to a more systematic method if one could be devised. Besides, gardening is impossible in the winter time.

So we began over again. After examination we classified the men, putting them first in Class "C," so called for convenience, for a short setting-up exercise, gradually advancing them to Classes A and B as they stood the tests. Hikes were begun and gradually lengthened, and although some dropped out, the great majority were glad of the chance to get out and walk and get away from camp. We examined the ones who dropped out and attempted to ascertain the reason. Very often we discovered some other complaint and transferred the patient to the proper ward. In some, the signs did not change very much, even though they stood the longest hikes and could play any game without perceptible fatigue. These, if there were still no definite signs of active tuberculosis, we returned to duty, and in others, the largest percentage, the moisture cleared up and they were once more good specimens of soldiers.

In the old, not completely resolved pneumonias, of which we had quite a number, the best results were obtained. Here the moisture seemed to dry up fairly rapidly, and what at first appeared as a pathological condition turned out, as is usually the case, to be only delayed resolu-

tion. This class of case we found improved with drainage, and the knee chest and inverted positions were used at regular intervals.

Those cases of plastic pleuritis so commonly met with, and which gave us no end of trouble on account of their repeated return to the camp with the diagnosis of T. B. of the bases, remained for the most part unchanged, and will probably stay with the patient for an indefinite period, although of no marked significance.

A number of cases of effort syndrome found their way to us, being diagnosed as pulmonary conditions because of their tachycardia.

Perhaps the thing that impressed me most was the change in attitude of the average individual. He seemed to get into the spirit of the hospital, liked the atmosphere that prevailed, and as a result was anxious to get better and return to duty. Where formerly it was a rarity for a man to ask to return to his organization, later it was an every-day occurrence to be spoken to about returning to one's regiment.

Thus, while getting the patients into shape, they are kept under close observation. Sputum examinations were made until at least ten negative reports were returned; temperature records, a. m. and p. m., kept, as are also the pulse records. The weights were tabulated and the X-ray of course, studied, and as close a study as possible made of each case, to arrive at a final diagnosis as soon as possible.

I do not think that any harm was done, but a great deal of good, by starting early at the exercises. Of course much further study is required before definite conclusions can be arrived at, but up to date the results have indeed been most satisfactory, from an army standpoint.

#### IN REFERENCE TO SPLINTS USED BY THE A. E. F.

In the November issue of the magazine there was published an article headed "The Transport Splints of the American Expeditionary Forces," by Lieut. Col. Robert B. Osgood, M. C., U. S. Army. After publication of the article, we received the following letter from the Clinton-Wright Wire Co.:

CLINTON-WRIGHT WIRE COMPANY

WORCESTER, MASS.,

COLONEL JAMES ROBB CHURCH,

*Army Medical Museum  
Washington, D. C.*

MY DEAR COLONEL CHURCH:

We read with interest your letter relative to Colonel Osgood's article on splints which appeared in THE MILITARY SURGEON. We do not doubt the complete reliability of the statements made by Colonel Osgood, but we feel that the story of splints used by the American Expeditionary Forces would not be complete without mention of the

fact that Wright Wire Company, now a part of Clinton-Wright Wire Company, manufactured more than 1,000,000 wire gauze splints, and was filling an order that would bring the total up to 1,600,000 at the time of the armistice.

Many of these splints were sent overseas and were largely used in first aid.

Very truly yours,

(Signed) JOHN W. ODLIN,  
*Advertising Department.*

Upon referring this to Colonel Osgood he wrote us in reply as follows:

COLONEL JAMES ROBB CHURCH,  
*Army Medical Museum,*  
*Washington, D. C.*

DEAR COLONEL CHURCH:

I am sorry that there should have been any misapprehension concerning the meaning of my statement in the article on the transport splints. This referred of course to the transport splints originally manufactured for the use of the expeditionary forces and referred only to the transport splints used abroad. As far as I know there were no other splints used with our armies in the A. E. F. for transport, except these splints manufactured through the agency of the Red Cross, but it is quite possible that I have been misinformed concerning the matter. I am aware of the fact that a large number of splints were manufactured in this country, but the patterns of these splints were somewhat different from those adopted overseas, and as far as I am aware they were not used in transporting the wounded.

I should be entirely agreeable to an insertion in *THE MILITARY SURGEON* saying that the article may have given the wrong impression; that as far as I am aware all the transport splints for the American Expeditionary Forces were manufactured in special shops under the agencies of the American Red Cross. Of course I am aware also that many splints were made under the supervision of the Medical Department of the United States Army entirely independent of the Red Cross, but it was my impression that these were only used in the base hospitals in this country or as a part of the equipment of the base hospitals sent abroad. I think I am rightly informed that these splints were not used in transporting the wounded back from the front, and that these made on this side were of a slightly different pattern.

Sincerely yours,

(Signed) ROBERT B. OSGOOD.

#### EXAMINATIONS FOR APPOINTMENT IN THE MEDICAL CORPS OF THE REGULAR ARMY

The Surgeon General of the Army announces that preliminary examinations of all eligible applicants for appointment in the Medical Corps, U. S. Army (regular) will be held on March 15, 1920, at various points throughout the United States, in the Philippine Islands, Hawaiian Islands, Panama Canal Zone and Porto Rico, and in France, Germany and Siberia, of applicants in the military service.

The essential requirements for eligibility to take the examination are that the applicant shall be a citizen of the United States, of good moral character and habits, between twenty-two and thirty-two years of age,

a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, and shall have had at least one year's post-graduate hospital internship.

The requirement that an applicant for appointment in the Regular Medical Corps shall have served at least a year's post-graduate hospital internship, is waived in the cases of those applicants who have satisfactorily served as commissioned officers for a period of at least one year during the World War.

The Government cannot pay any portion of an applicant's expenses incurred in connection with the examination, and in designating the places of examination, due consideration will, therefore, be given to localities from which applications are received in order to lessen such expenses as far as possible.

The examination will be both physical and professional. The physical examination will be thorough. Candidates who fall below 64 inches in height will be rejected. Each candidate must certify that he labors under no physical deformity or disability which can interfere with the efficient discharge of any duty which may be required. Errors of refraction, if vision is not below 20/100 in either eye, are not causes for rejection, provided they are not accompanied by ocular disease and are entirely corrected by appropriate glasses.

*Physical Proportions for Height, Weight, and Chest Measurement*

Height <i>Inches</i>	Weight <i>Pounds</i>	Chest measurement	
		At expiration <i>Inches</i>	Mobility <i>Inches</i>
64	128	32	2
65	130	32	2
66	132	32½	2
67	134	33	2
68	141	33¾	2½
69	148	33½	2½
70	155	34	2½
71	162	34¼	2½
72	169	34¾	3
73	176	35¼	3

It is not necessary that the applicant should conform exactly to the figures indicated in the foregoing table. The following variations below standard given in the table are permissible when the applicant is active, has firm muscles, and is evidently vigorous and healthy.

Height	Chest at expiration (inches)	Weight (pounds)
64 and under 68....	2	8
68 and under 69....	2	12
69 and under 70....	2	15
70 and upward....	2	20

The professional examination will be a written one and will embrace the following subjects: Anatomy, physiology and histology, materia medica and therapeutics, surgery, practice of medicine, obstetrics and gynecology. The minimum passing mark is 80 per cent.

The Medical Corps consists of commissioned officers in number approximately equal to seven for every one thousand of the total number enlisted strength of the Regular Army as authorized from time to time by law, proportionally distributed among the grades and in the ratios as follows: Colonels, 3.16 per cent; lieutenant colonels, 5.42 per cent; majors, 23.7 per cent; captains and first lieutenants, 67.72 per cent; and two brigadiers general in addition to the Surgeon General, who holds commission in the grade of major general.

Original appointments are, as required by law, made in the grade of first lieutenant and while at the present time it is necessary that a first lieutenant serve in that grade for five years before promotion to the grade of captain, legislation has been recommended that the period be reduced to three years. Promotions to the higher grades are made as vacancies occur and all promotions are subject to examination.

To each rank is attached a fixed annual salary which is received in monthly payments and this is increased 10 per cent for each period of five years' service until the maximum of 40 per cent is reached. At the present time a first lieutenant receives \$2,000 per annum or \$166.66 monthly; at the end of five years he receives the pay of a captain, \$2,400, with an increase of 10 per cent after five years' service, making \$2,640, or \$220 per month. After ten years' service the pay would be \$2,880 annually, or \$240 per month. The pay attached to the rank of major is \$3,000 a year, which, with 10 per cent added for each five years' service becomes \$3,600 after ten years' service, \$3,900 after 15 years' service, and \$4,000 after twenty years. The maximum monthly pay of lieutenant colonel, colonel, and brigadier general is \$375, \$416.66 and \$500, respectively. Officers, in addition to their pay proper, are furnished with allowance of quarters according to rank, either in kind, or where no suitable government building is available, by commutation; fuel and light therefor are

also provided. When traveling on duty an officer receives mileage for the distance traveled, including the travel performed in joining first station after appointment as first lieutenant. On change of station he is entitled to transportation for professional books and papers and a reasonable amount of baggage at government expense. Groceries and other articles may be purchased from the commissary at about wholesale cost price. Instruments and appliances are furnished for the use of medical officers in the performance of their duties. Well-selected professional libraries are supplied to each hospital, and standard modern publications on medical and surgical subjects, including medical journals are added from time to time. At each military post there is also a laboratory, and medical officers are encouraged to carry on any special line of professional study which appeals to them and which fits them for their duties as medical officers.

The Medical Department is operating a number of large general hospitals which offer exceptional advantages to medical officers, whose detail to duty in these institutions is made as the exigencies of the service permit so as to afford opportunity for purely professional work along the line of general medical and surgical service as well as the specialties.

Officers of the Medical Corps are entitled to the privilege of retirement after forty years' service, or at any time for disability incurred in the line of duty. On attaining the age of sixty-four, they are placed on the retired list by operation of law. Retired officers receive three-fourths of the pay of their grade (salary and increase) at the time of retirement.

While the present maximum age limit for appointment in the permanent Medical Corps is fixed at thirty-two years, it is believed probable that by prospective legislation that limit may be modified somewhat in the cases of those applicants who have had military service during the World War, and who are beyond the present age limit. Any such person may, therefore, submit application regardless of his present age, in order that he may be given opportunity for examination, should the suggested change be made prior to March 15, 1920.

Applications should be in letter form, addressed directly to the Surgeon General, United States Army, Washington, D. C., and should have embodied therein the following data in the order indicated:

- a. Name in full. (Initials not acceptable.)
- b. Date of birth.
- c. Place of birth.
- d. Permanent home address.
- e. Medical school or schools from which graduated with dates.
- f. Professional experience.

*g.* If an officer who has served during the emergency, complete statement of military service, setting forth (1) the organizations in which served and inclusive dates, (2) present organization if still in the service, (3) grade in which originally appointed, (4) present grade if still in the service, (5) date, place of discharge and rank at time of discharge if no longer in the service.

*h.* Statement of any service as a contract surgeon, in the Medical Reserve Corps, in the Medical Section, Officers' Reserve Corps, or in the Medical Service in Volunteers.

*i.* In cases of alien birth, (1) documentary evidence of naturalization, (2) if naturalized through parent, documentary evidence of father's naturalization and sworn statements from two reputable United States citizens establishing relationship between candidate and his father.

Approved applicants will receive an invitation from the Surgeon General, United States Army, to report to the examining board convened at the point nearest to their homes.

At the present time there are, approximately, seven hundred and thirty vacancies in the Medical Corps.

M. W. IRELAND,  
*Surgeon General, U. S. Army.*

## THE MILITARY PROGNOSIS OF SOME NEURO-PSYCHIATRIC AFFECTIONS<sup>1</sup>

BY DR. TOM A. WILLIAMS

*Corresponding Member Society of Neurology and Society of Psychology of Paris;*

*Corresponding Member, National Academy of Medicine of Rio de Janeiro;*

*Lecturer on Nervous and Mental Disease, Howard University, Washington, D. C.;*

*Neurologist to Freedman's Hospital.*

In every appreciation as to an individual's military capacity there is the possibility of a prognostic error; for a man who appears to be recuperated may not really be capable of withstanding conditions at the front. The number of cured cases, however, which have done so was very great in the French Army.

Where unfitness for military duty is a question greater certitude can be reached. Experience has shown that *men who have been trephined* can rarely stand fire. This is so even in men with a normal cerebro-spinal fluid and without headaches. It is very seldom that a man whose dura mater has been penetrated has been free of hypermotility, excessive fatigability and cardiac instability. The reactions of these men are also slowed, as measurements demonstrate.

When *commotion without wound* has occurred, men may be fit for the front provided that they are free of headache, faintness, dizziness and

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<sup>1</sup> Adapted from a personal communication of Prof. Laignel-Lavastine.

when their emotional, labyrinthine and spinal fluid reactions are not abnormal.<sup>2</sup>

*Meningeal inflammation* need not permanently unfit a soldier for duty. Even persistence of lymphocytosis and increase of albumen in the spinal fluid need not prevent a man returning to duty provided he has no neurological symptom and his general condition is good. This is particularly true where syphilis is concerned.

In *intoxication of the cerebrum* showing itself as mental confusion, a good prognosis can usually be affirmed.<sup>3</sup> A man can return to duty as soon as he is sleeping well and shows no slowing of reactions, more especially in his social relationships. Besides this the reliability of the memory must be assured in the case of an officer.

An *attack of melancholia* need not prevent a man from returning to the front as soon as his weight recovers and social activity is resumed. The same is true of maniacal hyperemotivity.

Very differently must be envisaged the *emotionalism* which is studied in Vol. I, Section III of forthcoming book "Disorders of the Nervous System in Warfare," where all of these disorders are intensively discussed, the *consequence of fatigue*, endocrine irregularities and prolonged strain. The recovery of these cases is not only prolonged but uncertain; as there are often profound bodily changes, more especially in the endocrine system, showing themselves as vasomotive dystaxia, tachycardia, disturbance of the oculocardiac reflex, abnormal reactions to hot or cold applications and to the injection of endocrine and other re-agents and obstinate disturbances of the secretions. Some men, in spite of these physical reactions, can dominate their emotions so as to appear brave at the front again, but even these men must break down before long because of the great strain entailed. Thus it is undesirable to return to the front a hyperemotive with marked changes in physical reactions.

On the contrary, when *emotionalism is purely psychogenetic* it can be removed psychotherapeutically, even when it is of long standing.<sup>4</sup>

The pseudo-emotionalism shown by some hysterics must be distinguished from the foregoing. Its mechanism is fully discussed in the chapter on "Hysterical Crises."

*Hysterics* must be rigidly differentiated from *asthenics* in whom the evidences of fatigue are revealed by low blood pressure, chilly extrem-

<sup>2</sup> Boston *Medical Journal*, January 8, 1920.

<sup>3</sup> See "Management of Confusional States," International Clinics, 1916: also "Diet in Psychiatry" in Fitch's "System of Diet," 1917, and in Transactions American Medico Psychologic Association, 1917.

<sup>4</sup> See again Vol. I, Section III; also, "Removal of Besetting Fears," International Clinics, 1919. Vol. iv.

ties, poorly reacting heart, glandular insufficiencies, against which the best psychotherapy is of course thrown away.

Psychoprophylaxis against harmful suggestions must not be omitted, however; but even here opotherapy, generous feeding and rest outrank syllogisms. Most fatigued men recover completely, although a minority are less able than before to withstand hardship.

*Motor or sensory hysteria* without marked emotionalism is still more readily curable; and every case should be available for the front if precautions against fresh suggestion and relapses are properly taken en route, and especially at the regimental depot. This is especially required when there is a tendency towards exaggeration or malingering in the case.<sup>5</sup>

*Sinistrosis* must not be confounded with hysteria. It consists of the state of mind which, believing itself aggrieved, imperiously demands redress from society, this being in military life the army authorities or the nation. It occurs more especially in men who have been wounded, but it may occur in the case of ill health without wound, and even when the ill health is purely imaginary or the wound trifling. In civil life demand for indemnity is the most usual manifestation. In war time this is complicated by the desire to avoid returning to the front.

Theoretically, *sinistrosis* should be curable like every psychogenetic state.<sup>6</sup> Practically it is regarded as incurable, so obstinately do these men hold their claims. That this pessimistic prognosis is unjustifiable is possible if we envisage adequately the data of modern psychotherapy, and if we are prepared to utilize our ingenuity in modifying the motivation of these patients in a constructive fashion. There are indications of the success of methods in which this principle has been utilized in a broad way. I refer to the training camps for convalescents so largely used in the last two years of the war by the British forces in France. (See chapter, "Management of Convalescents.")

The advice to dismiss from the army cases of sinistrosis is very general. This counsel does not consider the pernicious influence of these men upon civilian morale.<sup>7</sup> It is therefore less dangerous to keep them in the Army in special centers, isolated from contact with their fellows, as was being done in France towards the end of the war.

To be distinguished from the sinisters are the cases of simple *exaggeration and perseveration* which are almost the rule in wounded or sick soldiers. Some of them are very obstinate, but the majority can be successfully dealt with by a medical officer who does not allow his heart

<sup>5</sup>See "Military Hysteria" in *MILITARY SURGEON*, Nov., 1919; see also "Induction of Hysterical Symptoms and Their Removal," *Medical Record*, January 8, 1920.

<sup>6</sup>See "The Traumatic Neurosis," *Jour. Crim. Law*, 1916, *Am. Journ. Med. Science*, 1915, etc.

<sup>7</sup>See forthcoming article, "Military Hysteria in Relation to Industrial Morale."

to run away with his head, and who, of course, understands the psychology of the soldier.

An obstinate *perseverator* should never be discharged, as has been the practice in some armies. It affords an example far from salutary to other soldiers and is of incalculable harm to the civilians who learn of his successful evasion of service. When perseverance takes the form of persistent pain, the patient is often sincere. This is particularly true of pains in the back, or of sciatica, or of pains in a wound or joint. A proper reeducation, followed by training, renders the man fully fit for active service. (See chapter on "Algias and Faulty Attitudes.) Faulty attitudes and movements often follow periods of prolonged pain. Reeducation will likewise remove them and restore their producer to duty.

*Defectives* who become hospitalized from some other cause need not necessarily be discharged because defective. When cured of their acute condition they become useful in labor battalions or may even be fit for strictly military service.

*Constitutional psychopaths* should either be discharged or utilized for active duty. They are disturbing elements among troops at rest.

### INFORMATION FROM POLAND

THE MINISTRY OF PUBLIC HEALTH, REPUBLIC OF POLAND HEADQUARTERS  
POLISH TYPHUS RELIEF EXPEDITION  
UNITED STATES ARMY  
WARSAW, POLAND.

Bulletin No. 1.

October 23, 1919.

#### ORGANIZATION

For purposes of administration the Republic of Poland has been divided into six districts, numbered consecutively from one to six. The headquarters of the first is at Warsaw, of the second at Lodz, of the third at Kielce, of the fourth at Lublin, of the fifth at Lomzia, of the sixth at Lwow.

The active operations for the elimination of typhus and other infectious diseases are being handled by the Central Committee of the Ministry of Public Health. The Central Committee consists of three officers: Colonel H. L. Gilchrist, Medical Corps, U. S. A., commanding the American Polish Typhus Relief Expedition; Dr. Wiktor Hryszkiewicz, and Dr. Ludwik Rajchman, of the Ministry of Public Health of Poland.

Departments of Propaganda, Transportation, Statistics, Hospitalization, Quarantine, Finance and Schooling, under the Central Committee, have been established. The Transportation Officer is responsible for rail, motor and other forms of transportation. All property and supplies are handled by the Finance Department. A Polish officer has been placed in charge of each department.

Each district is divided into counties, eighteen to twenty-five in a district. At the head of each county is a County Medical Officer of Health, appointed by the Minister of Public Health.

Medical officers of the United States Army on duty with the expedition are assigned to districts as follows: Lieutenant Colonel Lee R. Dunbar, to Lublin;

Lieutenant Colonel E. C. Register, to Lwow; Major Willis P. Baker, to Kielce. These officers are closely associated with the Polish District Medical Officers and not only act as advisers but also conduct activities in cooperation with the district officer.

#### PERSONNEL AND EQUIPMENT

Twenty-two officers and 420 men are now on duty with this expedition in Poland, this personnel having convoyed to Warsaw the thirty-one trainloads of supplies thus far received for use in the anti-typhus work of the Polish Ministry of Health. In this huge shipment of equipment one notes with particular interest the 10,000 beds, 40,000 bed equipment, 1,000 tons of soap, 50 tons of washing soda, 1,000,000 suits of underwear, all the mobile laundries and sterilizers of the American Expeditionary Forces, 320 ambulances, 320 touring cars, 160 heavy trucks, and a large quantity of drugs and other supplies, all of which were purchased from the American Army in France.

Included also in this movement across Germany, accomplished under many difficulties, were five complete hospitals trains for the Sanitary Section of the Polish army, 68 cars of American Red Cross supplies, property and personnel for the Y. M. C. A. and the American Y. W. C. A., spare parts and miscellaneous supplies in less carload lots for practically every American mission and relief organization in Warsaw. The end of the tremendous transportation task is in sight, and with it comes a feeling of work well done.

#### OPERATIONS

Motor repair shops have been established at Zegrze, just out of Warsaw, at Lublin, Kielce and Lodz. These repair parks are fitted to care for motor vehicles of all kinds. They are under the command of officers of the United States Army.

A school for the instruction of Poles in the use of motor vehicles, steam sterilizers, and other equipment purchases from the American Army is achieving success at Zegrze. The course lasts twenty days and already about 300 men have graduated and are now doing efficient work in handling the new equipment.

Our men are now scattered from border to border of the new republic. Experts are setting up mobile steam laundries in eight of the larger cities of Poland to provide cleansing facilities for the poor and needy; hospital repair units and construction units are at work in two of the sanitary bases of the worst infested districts.

Four field columns, motorized sanitary trains of twenty enlisted specialists, under commissioned officers of the American Army, are bathing and delousing at the rate of 800 each daily. Priceless soap and precious underclothes are being distributed as the cleansing process is completed. At the moment these columns are operating in Przedbors, Slomniki, Wlodawa and Lwow. Highly successful results were obtained at Konskie, the first community in which field column operations were attempted, where over 5,000 men, women and children were bathed and deloused.

Hospitalization and quarantine operations are being conducted in Biala, Konsk, Lwow and other places in the south and east of Poland, where there is a stirring need also for food and clothing.

American property purchased by Poland is being distributed as rapidly as it can be convoyed from the yards in Warsaw to the towns and communities designated by the Ministry of Public Health. Approximately ten truck loads of supplies leave Warsaw daily for distribution.

## ACTIVITIES DURING THE PRESENT WEEK

During the present week field columns will be bathing and delousing in the cities of Przedborz, Slomniki, Wlodawa, Lwow (Lemberg), and possibly Chelm. Clothing is badly needed at these places for use after cleansing process is completed.

Supplies will be distributed throughout the districts of Lublin, Kielce, and Ledz.

Automobiles and motor vehicles can be repaired at Zegrze, Lublin, Kielce, Lodz and Biala.

Identity cards have been furnished members of this Expedition. These will be shown upon request.

H. L. GILCHRIST,  
Colonel Medical Corps, U. S. A.,  
Commanding.

THE MINISTRY OF PUBLIC HEALTH, REPUBLIC OF POLAND HEADQUARTERS  
POLISH TYPHUS RELIEF EXPEDITION  
UNITED STATES ARMY  
WARSAW, POLAND

*October 27, 1919.*

Bulletin No. 2.

## TRANSPORTATION

With the arrival in Warsaw on Thursday, October 23, 1919, of the thirty-second trainload of supplies and equipment for the typhus campaign, the transportation problem, involving over 1,600 cars, has been solved. Through the very efficient offices of Captain Fred Pumphrey, Sanitary Corps, functioning as the Executive Officer of the expedition in Paris, and Major W. H. Donaldson, Coast Artillery Corps, representative of the expedition in Coblenz, the enormous span between the American supply depots of France and the crying need of the typhus stricken of Poland has been bridged. The passage of the large quantity of property across Germany, outlined in Bulletin No. 1, has been smoothly and expeditiously accomplished. Too much credit cannot be given the above-named officers for the excellent work they performed in connection with the organization and overcoming the multitudinous difficulties that constantly crept into the work. Only one who has attempted European trans-continental transportation can fully appreciate the full extent of their labors.

## ADDITIONAL PERSONNEL

During the past week a noteworthy addition to the personnel of the expedition has been had. Six additional medical officers and four commissioned officers of the line of the United States Army including the Executive Officer from Paris, have arrived. The detail of the medical officers to some of the many vacancies in the professional administration of the expedition is now being achieved. The need for medical officers is most urgent, especially at this time, when a rapid increase in the number of typhus fever cases is expected.

To date, 31 commissioned officers and 420 enlisted men have arrived in Poland for duty with this Expedition.

## FIELD COLUMNS

Flattering reports are being received concerning the activities of the field columns. At Wlodawa, where much opposition was at first encountered and the assistance

of the military was required to get the people to the bathing and delousing plant, conditions have so changed that it now requires the assistance of the military to keep them away. The people realize the necessity of the work and are cooperating in every way.

Word has been received from Colonel Snively, Director of Field Operations, that at Lemberg 50,000 people are waiting to be bathed and deloused. Already one column is in the field there, and two others are expected to proceed to that point, weather permitting.

It is to be greatly regretted that winter is so close at hand. From the flattering success already achieved by the columns now in the field it is believed, if this work could have been commenced early in the summer with a large number of columns, the typhus epidemic would now be under control.

#### ACTIVITIES DURING PAST WEEK

Unfortunately there has been a dearth of gasoline. As a result many of the cars have been laid up and the distribution of supplies restricted. But it is believed this condition will soon be improved. A detachment of the expedition, under a noncommissioned officer, has proceeded to Galicia for the purpose of guarding a trainload of gasoline to be shipped from that field.

#### MOVEMENT OF MOTOR SCHOOL AND REPAIR SHOP

In view of the fact that the military have requisitioned the barracks and grounds now occupied by this command at Zegrze, it will be necessary for the organization to be moved to other quarters. Additional barracks have been secured on this side of the River Bug, about a mile from the present location. Here the headquarters of the organization will be located. The Motor Repair Park and the Chauffeurs and Mechanics School will be located at Praga, a suburb of Warsaw.

The new quarters were selected after several days of careful search throughout Warsaw and the vicinity, and the possibilities presented in the new plant will add greatly to the efficiency of the work. A modern factory site which has been idle is being transformed into an up-to-date repair and overhaul shop and park, with adequate floor space and facilities for carrying on all sorts of automobile and steam sterilizer repair work. This shop, when thoroughly organized, will be the most complete of its kind in Poland and will include the following departments:

	<i>Personnel</i>
Packard truck repair shop.....	20
Ford repair shop.....	14
Motor repair shop.....	6
Spare parts and storage.....	4
Radiator, blacksmithing and welding.....	5
Body repairing and painting.....	4
Vulcanizing department.....	2
Salvage.....	2
Magneto and electrical department.....	1
Steam sterilizer repair shop.....	4

It will require approximately sixty men to operate all departments and it is planned by the first of December to have the organization complete in every detail and ready to turn over to a like number of Poles, many of whom are now being instructed by members of this command for such duties.

## ALLIED CONTROL OFFICE

Under the direction of the Military Attaché of the American Legation, an Allied Control Office for the administration of problems of police of allied soldiers on the streets of Warsaw is being established. French or American soldiers against whose conduct in public places charges are made will be referred to this office for disposition; officers or men without billets may seek the aid of this office; traffic regulations will be enforced, in so far as it pertains to allied vehicles, by this office; general matter of inter-allied administration of personnel will in every case be disposed of by this office, from which place proper reference to organizations concerned will be had.

## ACTIVITIES DURING COMING WEEK

Field columns will be bathing and delousing in the cities of Przedborz, Słomniki, Włodawa and Lwow (Lemberg).

Supplies will be distributed throughout the districts of Lublin, Kielce, and Łódź, as soon as transportation facilities permit.

Automobiles and motor vehicles can be repaired at Lublin, Kielce, Łódź and Biala.

The movement of the motor repair shops and school from Zegrze to Praga will occupy the major portion of the week.

H. L. GILCHRIST,  
Colonel, Medical Corps, U. S. A.

## THE MINISTRY OF PUBLIC HEALTH, REPUBLIC OF POLAND HEADQUARTERS

## AMERICAN POLISH RELIEF EXPEDITION

UNITED STATES ARMY

WARSAW, POLAND

*Bulletin No. 3.**November 15, 1919.*

## PERSONNEL

The following officers of the United States Army are now on duty with this Expedition in Poland:

Colonel H. L. Gilchrist.....	Medical Corps.
Lieutenant Colonel Lee R. Dunbar.....	Medical Corps.
Lieutenant Colonel E. C. Register.....	Medical Corps.
Major Willis P. Baker.....	Medical Corps.
Major Frank H. Dixon.....	Medical Corps.
Major Francis M. Fitts.....	Medical Corps.
Major R. W. Riefkohl.....	Coast Artillery Corps.
Captain J. P. Crawford.....	Medical Corps.
Captain Rudolph Delehaney.....	Field Artillery.
Captain James D. Edgar.....	Medical Corps.
Captain Joseph G. Fernbach.....	Medical Corps.
Captain Howard J. Gorman.....	Infantry.
Captain Charles N. Harper.....	Medical Corps.
Captain Robert W. Hasbrouck.....	Coast Artillery Corps.
Captain Clyde H. Morgan.....	Coast Artillery Corps.
Captain Desmond O'Keefe.....	Field Artillery.
Captain Samuel J. Rhode.....	Dental Corps.
Captain Robert C. Snidow.....	Coast Artillery Corps.
Captain Harry Y. Stebbins.....	Field Artillery.
Captain Paul H. Strait.....	Medical Corps.
First Lieutenant Frank A. Allen.....	Field Artillery.

First Lieutenant Harold L. R. K. Albro.....	Cavalry.
First Lieutenant Arthur E. Fox.....	Field Artillery.
First Lieutenant J. M. Gillespie.....	Coast Artillery Corps.
First Lieutenant Emil Krause.....	Infantry.
First Lieutenant Paul B. Matlock.....	Infantry.
First Lieutenant John C. Moses.....	Field Artillery.
First Lieutenant Louis L. Shook.....	Veterinary Corps.
First Lieutenant James G. Strobridge.....	Cavalry.
Second Lieutenant Bryan Evans.....	Field Artillery.
Second Lieutenant Alfred M. Bergman.....	Field Artillery.

On duty with this expedition as liaison officer in Coblenz, Germany:

Major W. H. Donaldson.....	Coast Artillery Corps.
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#### EXPEDITION TO CARRY ON

The following telegram was received last Sunday:

Request of Herbert Hoover that Colonel Gilchrist Medical Corps and other army personnel continue on duty in Poland in anti-typhus campaign approved by Secretary of War. Only such enlisted personnel to be retained as will volunteer to stay in Poland until next spring.

It is interesting to note that all officers of the command but two have expressed a desire to remain on duty in Poland, and that a majority of the enlisted men also volunteered their continued service. It is planned to retain but 150 enlisted men and 30 commissioned officers.

#### FIELD COLUMNS

Due to the early appearance of the wintry weather and the accompanying blizzard, field operations have had to be discontinued. Personnel and equipment of the field columns have been ordered to the following cities:

Field Column No. 1, Radom; Field Column No. 2, Krakow; Field Column No. 3, Lublin; Field Column No. 4, Lwow (Lemberg).

The success attained by these columns, during the brief time they were in the field in the most severely infested sections of the country, has been most satisfying. Over 28,000 men, women and children have been bathed and deloused and over 2,000 suits of new underwear and 2 tons of soap have been distributed. It is also believed that the educational effects of the visitations of these columns are beyond estimation. The eagerness with which the baths were always received alone establishes the fact of their popularity and efficiency. At the first thaw of spring even more extensive operations of field columns will be recommenced, when it is contemplated to put forty in the field.

It is also most interesting to note that no cases of typhus fever have occurred in the sections of the country in which field columns have operated.

#### QUARANTINE CORDON ALONG THE EASTERN BORDER

Five medical officers, members of this expedition, have been assigned to the quarantine stations and military cordon along the eastern border. Every effort is being made to strengthen this cordon, and to that end a more strict quarantine is being placed along the border in order to prevent the large influx of refugees from entering Congress Poland prior to having been bathed and deloused.

The following medical officers, United States Army, and members of this expedition, have been assigned to this important work with stations as follows:

Lieutenant Colonel E. C. Register, Tarnopol; Captain James D. Edgar, Brzes-

Litewski; Captain Joseph G. Fernbach, Dorohusk; Major Willis P. Baker, Oswiecim; Captain Paul H. Strait, Bialystok.

Liaison has been effected with the American Red Cross and the European Children's Fund Administration, A. R. A. Through the good services of these organizations clothing, milk and food are being sent to the quarantine station at Dorohusk, where conditions are bad.

#### TRANSPORTING FOOD

Due to the premature arrival of winter, the food situation in many parts of Poland is becoming acute, especially as regards transportation. To relieve this condition, personnel and trucks are being used for this important work, it being realized that typhus fever and food distribution must be handled together.

#### MOTOR REPAIR AND SUPPLY BASES

The large motor repair shop at Praga is rapidly being put into shape and will soon be ready for making all kinds of repairs. Throughout the winter, motor bases will be operating at Lublin, Kielce, Lodz and Praga. Repairs of all sorts can either be effected at these stations or referred to that particular base at which the work can more thoroughly be done.

#### MOTOR TRANSPORTATION

Snow having rendered the outlying roads practically impassable, motor transportation has been temporarily curtailed. Throughout the winter, as now, every effort will be expended to accomplish motor communication throughout Poland, but it must be remembered that at times the highways of this country will be rendered absolutely impassable. Such transportation as strenuous effort and American ingenuity can effect will be maintained.

#### MOVEMENT OF RETURNING PERSONNEL

The first American military transport that ever departed from Poland will leave Warsaw on November 22. It will carry the returning 265 enlisted men and the five commissioned officers from Warsaw to Coblenz, Germany. Details for this movement are in experienced hands and every possible convenience and comfort will be provided for the extended trip.

#### MORE EQUIPMENT ARRIVES

Under the convoy of a commissioned officer and three American soldiers, seven more carloads of supplies have arrived in Warsaw.

#### DENTAL SURGEON

Captain Samuel J. Rhode, Dental Corps, U. S. A., is a member of this Expedition and has now received equipment with which he is enabled to perform ordinary dental treatment.

H. L. GILCHRIST.

#### GOVERNMENT POSITIONS IN OCCUPATIONAL THERAPY

The United States Civil Service Commission has announced examinations for field supervisor of reconstruction aides in occupational therapy, at \$1,800 a year; superintendent of aides in occupational

therapy, at \$2,400 a year; special instructor in occupational therapy, at salaries ranging from \$1,200 to \$3,500 a year, and reconstruction aide, at salaries from \$720 to \$960 a year. Reconstruction aides will also receive quarters, subsistence and laundry. Appointees to all positions whose compensation does not exceed \$2,500 a year will receive the increase of \$20 a month granted by Congress if their services prove satisfactory. In all about 500 positions in the Public Health Service throughout the United States, and at St. Elizabeth's Hospital (insane), Washington, D. C., will be filled.

The examinations for field supervisor of reconstruction aides and superintendent of aides will be held on February 24. The other examinations will be open until further notice. Both men and women, if qualified, will be admitted, but appointing officers have the legal right to specify the sex desired when requesting certification of eligibles.

None of the examinations require competitors to assemble in an examination room for tests. The ratings will be based upon the elements of education, training and experience and upon a written discussion on one of a number of given topics connected with the work.

Further information and application blanks may be obtained from the representative of the Civil Service Commission at the post office or customhouse in any important city, or by communicating with the United States Civil Service Commission, Washington, D. C.

#### FEDERAL LAW RELATING TO MARKING THE "COUNTRY OF ORIGIN" ON IMPORTED ARTICLES

We publish the following letter and extract of the Federal Law as a matter of interest to those who use surgical instruments, and because we believe, in addition to the fact that laws were designed to be obeyed, that the manufacturer is entitled to just protection and the buyer to the assurance that he gets what he pays for.—THE EDITOR.

GEORGE P. PILLING & SON CO.

MANUFACTURERS OF

SURGICAL INSTRUMENTS

N. E. CORNER, ARCH AND 23RD STREETS

PHILADELPHIA, PA., January 19, 1920.

"MILITARY SURGEON,"

*Colonel James R. Church,*

*7th and B Sts., S. W., Washington, D. C.*

MY DEAR COLONEL CHURCH:

Saturday afternoon last the writer called at your office, but unfortunately found you out. Your letter of January 7 was held awaiting my visit to Washington, as I

wished to explain to you verbally the great unfairness that is being done to the surgical instrument trade of this country.

You, of course, are aware how the various manufacturers in the United States did everything in their power to build up their plants in order to make surgical instruments for the war. If you are not familiar with this subject, ——————, we are sure, will be very glad to give you any desired information.

There is no question in our minds but what large numbers of surgical instruments imported from other countries have had the country of origin removed in order to create the impression with the surgeon that these goods were made in America. As an illustration we quote below paragraph 3 of a letter from ——————, which reads to us as though it was an invitation to import these instruments ready to plate and then before they are plated that the name can disappear from the instrument.

*Extract from letter of ——————*

"On this plan we handle two grades of instruments, the finished and unfinished instrument or instrument in the black unnickled. The advantage in the unfinished instrument is that the name Japan or Nippon will not appear when you complete it and any slight defects can be corrected by you. The unfinished instrument runs from ten to twenty cents cheaper than the completed article."

A few days ago we received a letter from a retail instrument house who had been asked to quote on American-made instruments. They did so, but they state they have every reason to think the instruments that were sold in competition with their own and at a lower price were imported goods from which the country of origin had been removed. It is very difficult indeed to positively make the assertion and specify definite dates and definite instruments, but in the minds of very many of the instrument people of this country it is the same belief that this practice is current, therefore it is thought that by making a reprint of the law on this subject and distributing it to the various surgical instruments dealers the situation would be improved.

Trusting you will give us favorable editorial notice in your early edition, we are,  
Yours very truly,

G. P. PILLING & SON CO.

C. J. PILLING,

*President.*

P. S.: Since writing the above we have learned that in one of the western cities the Federal authorities have made an investigation and found that the imported surgical instruments did have the country of origin on, that this country of origin was removed by this dealer in a western city and that the matter has now been turned over to the United States District Attorney.

*Copy of the Federal Law Relating to Marking the "Country of Origin" on Imported Articles*

*United States Tariff Act of 1913, Sec. 4, Par. F, Subsection 1*

That all articles of foreign manufacture or production, which are capable of being marked, stamped, branded, or labeled, without injury, shall be marked, stamped, branded, or labeled in legible English words, in a conspicuous place that shall not be covered or obscured by any subsequent attachments or arrangements, so as to indicate the country of origin. Said marking, stamping, branding, or

labeling shall be as nearly indelible and permanent as the nature of the article will permit.

All packages containing imported articles shall be marked, stamped, branded, or labeled so as to indicate legibly and plainly, in English words, the country of origin and the quantity of their contents, and until marked in accordance with the directions prescribed in this section no articles or packages shall be delivered to the importer.

Should any article of imported merchandise be marked, stamped, branded, or labeled so as not accurately to indicate the quantity, number, or measurement actually contained in such article or package, no delivery of the same shall be made to the importer until the mark, stamp, brand or label, as case may be, shall be changed so as to conform to the facts of the case.

The Secretary of the Treasury shall prescribe the necessary rules and regulations to carry out the foregoing provision.

*Copy of the Federal Law Relating to the Removal of the "Country of Origin" from Imported Articles*

United States Tariff Act of 1913, Sec. 4, Par. F, Subsection 2

If any person shall fraudulently violate any of the provisions of this act relating to the marking, stamping, branding, or labeling of any imported articles or packages; or shall fraudulently deface, destroy, remove, alter, or obliterate any such marks, stamps, brands, or labels with intent to conceal the information given by or contained in such marks, stamps, brands, or labels he shall upon conviction be fined in any sum not exceeding \$5,000, or be imprisoned for any time not exceeding one year or both.

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CASH FOR BACK NUMBERS

We will pay twenty-five cents each for copies of THE MILITARY SURGEON for August, 1918, if in good condition.

Address

The Association of Military Surgeons of the U. S.,  
Army Medical Museum, 7th and B Streets, S. W.,  
Washington, D. C.

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REMEMBER THAT OUR NEXT ANNUAL MEETING IMMEDIATELY PRECEDES THAT OF THE A. M. A. AT NEW ORLEANS. BETTER MAKE IT A POINT TO COME TO BOTH.

## BOOK REVIEWS

**WHAT WE KNOW ABOUT CANCER.**<sup>1</sup>—A Handbook for the Medical Profession. Prepared by a committee of the American Society for the Control of Cancer, American Medical Associated Press. Chicago: 1918.

The American Society for the Control of Cancer has been in existence and working effectively for a number of years. The sole object of the society, at present at least, is the "dissemination of facts in regard to cancer to the end that its mortality may be reduced by a wider knowledge of the disease."

The effort represented by the present pamphlet has perhaps the most far-reaching possibilities for good of any single attempt to lessen cancer mortality undertaken in this country.

It is no longer necessary to argue the point that delay is the one great factor in cancer mortality. At least four-fifths of cancer deaths could be prevented by early recognition. The conditions necessary for recognition of cancer in ample time for cure are not ideal but distinctly practicable. Public education is one important pathway of improvement, but education of the medical profession itself is of equal, if not greater, importance. Statistical studies have shown that in the majority of cases the doctor has had the cancer patient "under observation" over a year before efficient curative treatment is instituted. It is needless to state that during this year the majority of cases have changed from curable to incurable. As the pamphlet itself somewhat mildly puts it, "The conditions call for a far keener appreciation of responsibility for the mortality from cancer than now generally exists in the medical profession."

It is not possible here to abstract this pamphlet, which is already so condensed. The general facts concerning cancer are outlined, and then each important type and site of cancer is taken up in detail and the forms, symptoms, standard treatment, and results to be expected are outlined for each type.

The chief point we would make here is that if every medical man would study and seriously apply the teaching in this pamphlet, which he can read in an hour, the question of delay in cancer would be solved in so far as it is referable to the medical profession. The ultimate possible good obtainable from the widespread dissemination of this pamphlet is so great that we would urge every possible means to get it into the hands of as many medical men of all classes as possible. It can be had from the American Medical Association, 535 N. Dearborn St., Chicago, for 10 cents. If you are a trained surgeon, get it. It will interest you. If you are further afield, get it and study and apply it. If you feel misgivings that some of your cases in the past might have been saved had you been more sure and acted more promptly (and who of us does not have such misgivings), get it. It will help you in future cases.

We would especially beg the assistance of boards of health, both state and municipal, and of medical societies in distributing the pamphlet. It can be bought cheaper in quantities and sent out with your other mail matter with almost no extra cost or trouble. When such a simple means for such far-reaching good is in our hands it is a pity to let it lie neglected.

**UROLOGY**, by Victor Cox Pedersen, A.M., M.D., F.A.C.S., Major, Medical Reserve Corps, United States Army; Consulting Physician to the Selective Service Headquarters in the city of New York; Member of the Council of National Defense, New

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<sup>1</sup>Published by request of The American Society for the Control of Cancer.

York State Committee, Medical Section; Visiting Urologist to St. Mark's Hospital; Member of the American Urologist Association, American Medical Association, New York State and County Medical Societies, New York Academy of Medicine, American Electrotherapeutic Association, the Association of Military Surgeons of the United States, and of the Committee on Venereal Diseases of the Advisory Council of the Department of Health of New York City. Illustrated with 362 engravings, of which 152 are original and 13 colored plates. Philadelphia and New York: Lea & Febinger. Price, \$7.00.

This book represents the experience of many years in urological departments in New York City, in private practice and in the author's clinic at St. Mark's Hospital. It is planned so that both students and practitioners receive a clear, practical word-picture of the important affections.

On page 57 is a copy of a leaflet which the author places in the hands of his patients suffering from gonorrhea. It serves to give a brief, intelligent idea of this communicable disease and should prove of value in securing the co-operation of the patient in management and treatment.

Chapters VIII and IX are of unusual value. They take up the general principles of diagnosis and treatment.

Cystoscopy is considered in Chapter XIII, with a number of valuable suggestions.  
H. F. STRINE.

**APPLIED ANATOMY AND KINESIOLOGY.**—The Mechanism of Muscular Movement by Wilbur Pardon Bowen, M.S., Professor of Physical Education, Michigan State Normal College. Second edition. Price \$3.50. Pp. 354, with 197 illustrations. Philadelphia: Lea & Febiger, 1919.

The author in defining Kinesiology gives it a broad definition. He says: "It includes the study of the principles of muscular exercises, with inquiry as to how they are performed, how they react on the body, and their relation to the problems of bodily development, bodily efficiency, and the prevention and cure of certain defects and deformities." He says that "to make such study it is necessary to analyze complex movements into their simple elements, to note carefully what bones, joints, and muscles are involved, what part each muscle has in the work, and under what mechanical conditions its work is done."

In order to do this he has divided his book into five parts. Part One, General Principles—The Treatment of Muscular Structure and Action—includes a description of the joints, the study of bones as levers, and a simple explanation of the muscular control by the nervous system. Part Two discusses the upper limb, commencing with the movements of the shoulder girdle, which in man is described as consisting of two bones, the clavicle and scapula. He takes up, in succession, the movements of the shoulder joint, elbow, fore-arm, wrist and hand.

There are chapters devoted to the movements of the lower limb, also to the trunk; these latter explaining the movements of the spinal column, breathing, and the maintaining of the upright position, and how defects in posture may come about.

In the last part of the book General Kinesiology is taken up. It explains teamwork among muscles; gymnastic movements; which muscles are brought into action in many of the different plays, games, sports, and industrial occupations. The idea of all this, of course, is the proper development and position of the muscles and the skeleton.

The reviewer believes that this book would make a valuable one for medical officers to study, and perhaps for use as a text in instructing those who are responsible.

sible for the carrying out of our setting-up exercises in the Army. The why and wherefore of many of these exercises can be readily understood by a reference to Professor Bowen's book. This would also be an excellent text from which instructors in physical education in our different universities and colleges might better inform themselves and systematize their methods of instruction.

The study of muscular and body movements could in addition to such a text, be well illustrated by moving pictures rapidly taken, thirty or forty per second, and shown at the usual rate of speed.

JNO. E. SUMMERS.

THE SURGICAL CLINICS OF CHICAGO, Volume III, Number 4 (August, 1919) and Number 5 (October, 1919). Philadelphia and London: W. B. Saunders Company. Published bi-monthly. Price per year: Paper, \$10.00; cloth, \$14.00.

These two numbers continue the same standard of excellence as that in the others which have preceded them during the year. We find that about one-half of the articles are contributed by the same men. As is to be expected, a great difference is noted in the style of the contributions, some being of the text-book or monograph type; others, case reports; while there are a few which are upholding the reputation of Chicago as the leading clinical surgical center, distinguished by the late Moses Gunn, Charles T. Parks, Nicholas Senn, and John B. Murphy.

In the numerous medical journals which, weekly, monthly, or quarterly, reach the desk of the reviewer, he does not recall having noted a single contribution of the type of a medical or surgical clinical lecture. Formerly these lectures were not uncommon and were of great value. Too many articles appearing in the current medical press are hardly worth the time given them by their contributors, and surely not worth that of their expected readers; therefore many are not read at all. The subjects of which they are composed can be found better done in text-books, monographs, and hospital reports. From an economic point of view they are not worth while.

Certainly no one can read the Chicago Surgical Clinics without absorbing useful knowledge and having his clinical sense made more acute.

JNO. E. SUMMERS.

LEÇONS DE CHIRURGIE DE GUERRE, by MM. Guillain, Jeanbrau, Lecène, Lemaitre, Leriche, Magitot, Mocquot, Nogier, Okinczyc, Piollet, Policard, Roux-Berger, Tissier. Published by Masson and Co., Paris, 1918. Price, 9 fr. (+10 per cent).

This series of lectures by some of the most experienced and best known French surgeons, each having made a name for himself in the subject of which he writes, impresses the reviewer as perhaps the clearest exposition of war surgery which has appeared in book form.

Early in the war the Centre de Bouleuse, because of its being a favorable place near the front, was chosen as a kind of university for the instruction of medical men in all the phases of military medicine and surgery. The original lectures have been elaborated somewhat, and in their present form are very complete; the opinions expressed in them differ little from those generally accepted by English and American surgeons.

The contributors and subjects of these lectures are: P. Lecène, Principles of the Surgical Treatment of War Wounds; A. Policard, General Pathological Anatomy and

Physiology in the Repair of War Wounds; H. Tissier, Bacteriology of Wounds; P. Lecène, Tetanus; C. Jeanbrau, Anemia and Transfusion; Th. Nogier, The Radioscopic Procedures for the Removal of Projectiles, Applicable in the Formations at the Front; René Lemaitre, Primary Suture; P. Poillet, Disinfection and Secondary Suture; Pierre Moquot, Amputations; René Leriche, Wounds of the Articulations, Fractures of the Diaphyses, Orthopedics; M. Okinczyc, Wounds of the Abdomen; J. L. Roux-Berger, Wounds of the Pleura and of the Lung; P. Lecène, Immediate Treatment of Wounds of the Head; G. Guillain, The Secondary Complications of Wounds of Nerves; A. Magidot, Ocular Wounds.

The illuminating style of these writers is refreshing, characterized by its to-the-point and absence of repetition and prolixity.

**JNO. E. SUMMERS.**

**PLASTIC SURGERY, ITS PRINCIPLES AND PRACTICE,** by John Staige Davis, Ph.B., M.D., F.A.C.S., Instructor in Clinical Surgery, Johns Hopkins University; assistant visiting surgeon, Johns Hopkins Hospital; visiting surgeon and plastic surgeon to the Union Protestant Infirmary, the Hospital for the Women of Maryland, and the Children's Hospital School, Baltimore, Md.; Fellow of the American Surgical Association, the Southern Surgical Association, etc. The book has 864 illustrations, containing 1,637 figures. Philadelphia: P. Blakiston's Son & Co. Price, \$10.00.

Doctor Davis has written a book, the principles and practice of which are based on an extensive personal experience added to a most thorough knowledge of the work of others. Previous to the Great War surgeons were fairly familiar with plastic surgery as treated of in general text-books, but no book worth while, of this special subject, had been published in English. Those who are fortunate enough to have visited the Army and Navy Exhibit at the last meeting of the American Medical Association at Atlantic City will recall a remarkable set of figures and drawings illustrative of what was being accomplished by our own surgeons in repairing some of the frightful disfigurements of war wounds. It was a revelation. The writer does not recall the names of the gentlemen whose work was responsible for this exhibit, but they must have been men who had worked along the same line as has Doctor Davis, and had had opportunities to study the brilliant technique of some of our English and French surgeons who have contributed so largely towards what is best in plastic surgery.

Nothing seems to have been omitted in this book. There are twenty-five chapters including an Historical Review; Prosthesis; Transplantation of Skin and other Tissues; Different Kinds of Flaps; the Treatment of Wounds, Intractable Ulcers, and Varicose Veins, Scars and Keloids, many kinds of mal-formations, as Harelip and Cleft Palate, Exstrophy of the Bladder; Epispadias and Hypospadias; Atresia of the Vagina. Regional Plastic Surgery is then taken up, particularly that of the eye-lids, ears, nose, jaws, lips, and cheeks; and finally the Surgery of the Neck, Trunk and Extremities. All of these subjects will be found discussed in good, plain English, and illustrated with drawings and photographs which are comprehensible and instructive. At the end of each chapter will be found an extensive bibliography.

There are very few conditions of which we can think, where plastic surgery is applicable, which cannot be found discussed in this work.

**JNO. E. SUMMERS.**

**QUARTERLY MEDICAL CLINICS.** Volume 1, Number 2. Medicine and Surgery Publishing Company, Inc., Metropolitan Bldg., St. Louis, Mo.

This is a compact volume of some two hundred odd pages and contains a review of 13 cases suffering from varied ailments. These are indexed according to symptomatology and also in accordance with diagnosis, so that as a matter of fact comparison of the two tables of contents furnishes one in the first with the symptomatology and the second with a completed diagnosis after detailed examination of the case. The arrangement is systematic, so that the reader has the advantage of following the same routine in each case presented.

As an example of the diversity of the contents we quote among the 13 cases which compose the subject matter, the following cases:

"**CASE XVI.** Epidemic Encephalitis ('Sleeping Sickness,' 'Lethargic Encephalitis') Chronic, Non-active, Peptic Ulcer."

"**CASE XIX.** Peptic Ulcer Complicated by Recent Gastrorrhagia; Lues."

"**CASE XXV.** Deep Urethral Obstruction Caused by Carcinoma of the Prostate Resulting in Enormous Dilation of the Urinary Bladder. General Arteriosclerosis with Arterial Hypertension, Cardiac Hypertrophy and Intestinal Nephritis; Chronic Pancreatitis."

"**CASE XXVIII.** Advanced 'Hemolytic' or 'Pernicious' Anemia. Abscesses of the Roots of the Teeth; Chronically Infected Appendix and Gall-Bladder; Splenitis and Perisplenitis."

The sub-titles have not been added to the above but enough indicated to show that the "Clinics" are not confined to any one particular type of disease. Detailed notes on clinical and laboratory procedures are distinctive of these "Clinics" and are very suggestive as to the proper and thorough manner of reaching a diagnosis in regard to many pathologic conditions. The summary of etiology and treatment together with the sections on the technique of diagnostic and therapeutic procedures is concise and in accordance with modern views. The material is presented in a manner so clear as to be easily assimilated by students and there is no question but what it must be of much value to the general practitioner in keeping up with the advance of modern procedure. As well as the presentation and analysis of the cases which form the subject matter of the volume, the discussion following these as to treatment, prognosis, etc., is of much value and represents the practice of today in respect to the treatment of the disease condition under discussion.

The book is generously illustrated, the illustrations are clear and well produced. They embrace tables as well as reproductions of photomicrographs and illustrations showing gross conditions and certain apparatus used in connection with diagnosis or treatment. The volume should be of interest to any practitioner who seeks an orderly exposition of the symptoms of a given case and a logical discussion as to diagnosis, prognosis and treatment.

J. R. C.

**A MANUAL OF HYGIENE AND SANITATION,** by Seneca Egbert, A.M., M.D. Seventh edition, enlarged and thoroughly revised. Illustrated with 160 engravings and 5 plates. Philadelphia and New York: Lea & Febiger, 1919. Price, \$3.00.

In this seventh edition Dr. Egbert has brought his book up to date with the recent advances in sanitary science. With the increased importance which sanitation is assuming in medicine the book is acceptable and timely. Certain parts of it have more historical value possibly than practical application, as, for example, the accounts of the outbreaks of typhoid at Plymouth and at Altona and Hamburg.

With the growing prevalence of inoculation against typhoid and the decrease of this disease as an epidemic, instances of wholesale infection such as the two quoted must have a value more from the standpoint of what occurred in the darker ages than what can happen now in the time of our enlightenment.

Special attention is given in this work to chapters on Sewage Disposal, Industrial Hygiene, and Military Hygiene. The first of these is timely, for it has not been so many years since exact information on this subject was difficult to obtain in printed form. We remember when it was not an easy matter to obtain any working plans or specifications of even the septic tank system of sewage disposal. Industrial hygiene, under national and state laws, assumes far and away more importance than in even the recent past. After our participation in the recent war the subject of military hygiene is one which concerns not only those who in their service in this country or overseas have been intimately concerned with its application but those who carry the lessons learned there back into civil practice. The illustrations are ample, and the book is compact and well gotten up. Dr. Egbert's past service with the colors has qualified him to speak not only from the standpoint of the hygienist in general, but from the point of view of one who has had these problems to meet in campaign.

J. R. C.

HYGIENE AND SANITATION, a Text-book for Nurses, by George M. Price, M.D.

Third edition, revised and enlarged. Philadelphia and New York: Lea & Febiger. Price, \$1.75.

In this Dr. Price has amplified his work in the earlier editions. The book now contains 253 pages and is divided into seven chapters, the titles of which are as follows: Introduction to the Study of Hygiene, The Hygiene of Habitations, The Hygiene of Foods and Food Supply, The Hygiene of Schools and School Children, The Hygiene of Occupation, Infectious Diseases and Their Prevention, Personal Hygiene. The chapter on Infectious Diseases is new and those on Personal Hygiene and School Hygiene considerably elaborated.

The work does not deal with topics relating to the care and treatment of diseased persons as covered in the course in training schools. Its design is to teach the elements of hygiene in the various branches, and it is valuable to the graduate nurse as a book of reference as well as a text-book.

J. R. C.

THE NARCOTIC DRUG PROBLEM, by Ernest S. Bishop, M.D., F.A.C.P., Clinical Professor of Medicine, New York Polyclinic Medical School; Member Narcotic Committee, Conference of Judges and Justices of New York State; Committee on Habit Forming Drugs, Section on Food and Drugs, American Public Health Association, etc. New York: The Macmillan Company. Price, \$1.50.

From the list of titles which follows the name of the author, it is quite evident that he is qualified to speak *ex cathedra* on the subject on which he writes. We note in his preface his distinct disavowal of the rôle of the specialist, and this puts us in mind of the trial in which expert testimony was offered. After three specialists had proven their qualifications and testified, another medical man was called to the stand and, upon being asked by the presiding judge as to whether he was a specialist or not, stated emphatically that he was a general practitioner. Upon further inquiry from the judge as to what the difference was between a general

practitioner and a specialist he replied that it took about thirty-seven specialists to make one general practitioner.

However this may be, there is no question from either side as to Dr. Bishop's ability to deal with the subject which he has chosen. The book comprises ten chapters, the titles of which are as follows: Introduction; Fundamental Considerations; The Nature of Narcotic Drug Addiction-Disease; The Mechanism of Narcotic Drug Addiction-Disease; Remarks on Methods of Treating Narcotic Drug Addiction; The Rational Handling of Narcotic Drug Addiction-Disease; Relation of Narcotic Drug Addiction to Surgical Cases and Intercurrent Diseases; Laws, and Their Relations to Narcotic Drugs; Some Comments upon the Legitimate Use of Narcotics in Peace and War; General Survey of the Situation and the Need of the Hour; Appendix; Human Documents—Statements of Sufferers from Narcotic Drug Addiction-Disease.

Chapters 5, 6 and 8 are of particular interest. The book is compact in form and well worth the consideration of anyone who has to deal with this form of disease.

J. R. C.

**FOOD FOR THE SICK AND THE WELL,** How to Select It and How to Cook It, by Margaret P. Thompson, Registered Nurse. Cloth, ix+82 pages. Yonkers-on-Hudson, New York: World Book Company. Price, \$1.00.

The housewife as well as the physician and the nurse will find in this volume a valuable help and guide. The text discusses the relation of food to health and the necessity of a balanced menu.

There are receipts for breakfast cereals, breads, eggs, soups, meats, fishes, cereals and starchy vegetables, green vegetables, salads and desserts, cakes, albuminous drinks, jellies, canned fruits, and cheese dishes.

An index of several pages will enable people to find what they are looking for in a hurry.

**LES LESIONS DES NERFS,** by Mme. Athanassio-Benisty. Illustrated. Masson et Cie Editeurs, Libraires De L'Academie De Medecine, 120 Boulevard Saint-Germain, Paris.

This is the second volume of two by Mme. Athanassio-Benisty, House Physician to La Salpetriere, "The Treatment and Repair of Nerve Lesions."

This includes a study of the anatomical and histologic changes; the signs and symptoms of the serious lesions, especially those due to the complete section of nerves and gives the signs indicative of the motor, sensory and electrical restoration of function. Further it takes up localization methods, the joint disturbances consequent upon nerve lesions such as contractures and the rare forms of paralyses and deformities. All methods of treatment that have been in actual use during the war have been adequately described.

The indications for surgical intervention and physical therapy have been well presented.

Of particular interest is the chapter pertaining to orthopedic apparatus, the ingenuity of which is so well known by those who have been in the military service, that comment seems unnecessary.

This represents a condensation of the results and conclusions made by Mme. Athanassio-Benisty as a consequence of her work for several years as an associate of Professor Pierre Marie. This, with the previous volume, "The Clinical Forms of Nerve Lesions," forms a comprehensive treatise on the subject and should be invaluable not only to the neurologist but to the physician who has not had the opportunity of special training in neurology.

ROBERT FRANCIS SHEEHAN.

## BOOKS RECEIVED

Books received are acknowledged in this department and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interest of our readers and as space permits.

**RIOTS AND RIOT DUTY**, by Edward S. Farrow, late Assistant Instructor of Tactics, U. S. Military Academy, West Point, 1919. Asbury Park, N. J.: The Military-Naval Book Corporation. Price, 50c each; \$5 per dozen.

**SHELL-SHOCK AND OTHER NEUROPSYCHIATRIC PROBLEMS PRESENTED IN FIVE HUNDRED AND EIGHTY-NINE CASE HISTORIES FROM THE WAR LITERATURE, 1914-1918**, by E. E. Southard, M.D., Sc.D., 1919. Boston, Mass.: W. M. Leonard, Publisher. Price, \$10.

**THE SURGICAL CLINICS OF CHICAGO**. Vol. III, No. 6. December, 1919. Philadelphia and London: W. B. Saunders Company. Paper, \$10.00; Cloth, \$14.00 per year. Published bi-monthly.

**THE NARCOTIC DRUG PROBLEM**, by Ernest S. Bishop, M.D., F.A.C.P. New York: The MacMillan Company, 1920. Price, \$1.50.

**THE SURGICAL CLINICS OF CHICAGO**, August, 1919. Vol. 3, No. 4. Philadelphia and London: W. B. Saunders Company.

**THE ARMY BEHIND THE ARMY**, by E. Alexander Powell, New York: Charles Scribner's Sons.

**IDO**, Exhaustive Text-book of the International Language of the Delegation and Fundamentals of an Artificial International Language, by Dr. Max Talmey. New York: Ido Press, 1919.

**A MANUAL OF HYGIENE AND SANITATION**, by Seneca Egbert. Seventh edition, illustrated. Philadelphia and New York: Lea & Febiger, 1919. Price, \$3.00.

**EXPERIMENTAL PHARMACOLOGY**, by Hugh McGuigan, Ph. D., M.D. Illustrated. Philadelphia and New York: Lea & Febiger, 1919. Price, \$2.75.

**HYGIENE AND SANITATION**, A Text-book for Nurses, by Geo. M. Price, M.D. Third edition. Philadelphia and New York: Lea & Febiger, 1919. Price, \$1.75.

**THE SURGICAL CLINICS OF CHICAGO**, October, 1919. Vol. 3, No. 5. Philadelphia and London: W. B. Saunders Company.

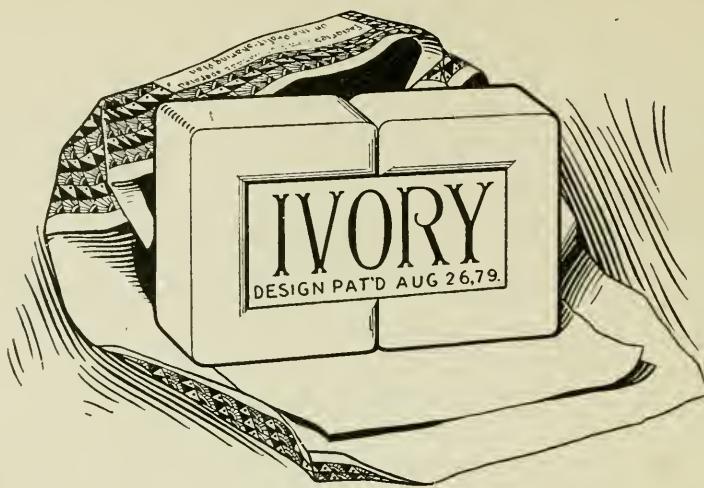
**DISEASES OF THE NERVOUS SYSTEM**, by Jelliffe & White. Philadelphia and New York: Lea & Febiger, 1919.



## **Obituary**

Those of our membership whose deaths have been noted since our last report are as follows:

- Col. P. D. Barnhill**, Medical Corps, United States Army.  
**Maj. William G. Bissell**, Medical Corps, New York National Guard.  
**Capt. Paul B. Coble**, Medical Corps, United States Army.  
**Lieut. Col. Julius Francis Henkel**, Medical Corps, United States Army.  
**Col. John Van R. Hoff**, Medical Corps, United States Army.  
**Lieut. Justin A. McCarthy**, Medical Corps, U. S. N. R. F.  
**Dr. Malcolm McKiunon**.  
**Capt. G. H. Rathbun**, Medical Corps, United States Army.  
**Capt. Thomas H. Seay**, Medical Corps, United States Army.  
**Col. R. M. Thornburg**, Medical Corps, United States Army.



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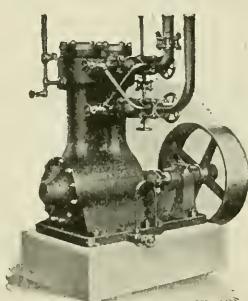
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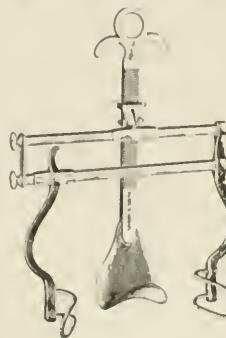
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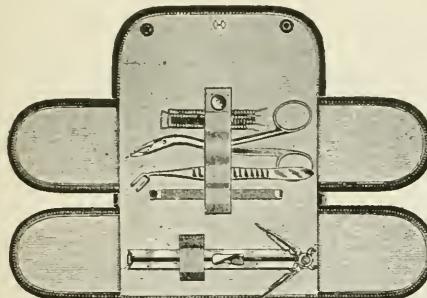
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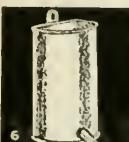
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Fig. 4—Pitcher, capacity 2 quarts.

Fig. 5—Dressing Jars, size:  $\frac{1}{2}$ , 1,  $2\frac{1}{4}$  and 4 quarts.

Fig. 6—Irrigators, sizes 1, 2 and 3 quarts.

Fig. 7—Irrigators, sizes 1, 2 and 3 quarts.

Fig. 8—Funnels, diameter top,  $3\frac{1}{4}$ ,  $4\frac{3}{4}$  and  $6\frac{1}{4}$  inches.

Fig. 9—Oval Seamless Tubs, sizes 11 and 16 quarts—17 and 19 in. long.

Fig. 10—Conical Mugs, sizes top, dia.  $2\frac{3}{4}$ ,  $3\frac{1}{4}$  and  $3\frac{1}{2}$  in.

Fig. 11—Conical Tumblers, sizes top, dia.  $2\frac{3}{4}$ ,  $3\frac{1}{4}$  and  $3\frac{1}{2}$  in.

Fig. 12—Dinner Plates, sizes dia.  $7\frac{1}{2}$ ,  $7\frac{3}{4}$ ,  $8\frac{1}{2}$ ,  $9\frac{1}{4}$  and  $10\frac{1}{2}$  in.

Fig. 13—Soap Dish with Drainer, size  $5\frac{3}{8} \times 4\frac{1}{8} \times 1\frac{1}{8}$  in.

Fig. 14—Cups and Saucers, sizes, cups  $\frac{1}{2}$  and  $\frac{3}{4}$  pints; saucers  $6\frac{1}{8}$  in. dia.

Fig. 15—Sputum Cup, size  $3\frac{3}{8} \times 3\frac{3}{4}$  in.

Fig. 16—Oval Trays, sizes  $10 \times 8 \times \frac{3}{4}$  in.,  $12 \times 9\frac{1}{2} \times 1\frac{1}{16}$  in.,  $14 \times 11\frac{1}{4} \times \frac{3}{4}$  in.,  $16 \times 13 \times \frac{15}{16}$  in.,  $18 \times 14 \times 1$  in., and  $20 \times 15 \times 1\frac{1}{8}$  in.

Fig. 17—Round Medicine Trays, sizes dia. 8, 10 and 12 in.

Fig. 18—Oblong Serving Trays, sizes  $8\frac{3}{8} \times 11\frac{1}{4}$  and  $11\frac{1}{4} \times 16\frac{1}{4}$  in.

Fig. 19—Pus Pans, Kidney Shape, sizes  $6\frac{1}{4} \times 3 \times 1\frac{1}{4}$ ,  $8 \times 3\frac{1}{2} \times 1\frac{1}{4}$ ,  $10 \times 5 \times 1\frac{1}{4}$  and  $12 \times 7 \times 2$  in.

Fig. 20—Basins, size  $10\frac{3}{8} \times 2\frac{3}{4}$ ,  $11\frac{1}{4} \times 2\frac{3}{4}$ ,  $11\frac{1}{8} \times 3\frac{1}{8}$ ,  $12\frac{1}{2} \times 3\frac{3}{8}$ ,  $13\frac{3}{8} \times 3\frac{3}{8}$ ,  $15 \times 4$ ,  $15\frac{3}{8} \times 4\frac{1}{2}$ ,  $17\frac{3}{8} \times 4\frac{1}{2}$  and  $19\frac{3}{8} \times 5$  in.

Fig. 21—Brush or Instrument Tray, size  $8 \times 3 \times 1\frac{1}{2}$  in.

Fig. 22—Eating Bowls, sizes  $4 \times 2\frac{3}{8}$ ,  $4\frac{3}{4} \times 2\frac{3}{4}$ ,  $5\frac{1}{2} \times 3$  and  $6\frac{1}{4} \times 3\frac{1}{4}$  in.

Fig. 23—Sponge Bowls, sizes dia. by depth:  $4 \times 2$ ,  $5 \times 2\frac{1}{4}$ ,  $6 \times 2\frac{1}{2}$  in.

Fig. 24—Bed Pan,  $18\frac{1}{2}$  in. long by 4 in. deep.

Fig. 25—Queen Bed Pan, 15 in. long over all, 12 in. wide over all, 4 in. deep over all.

Fig. 26—Instrument Trays, sizes  $7\frac{1}{8} \times 5\frac{5}{8} \times 1\frac{1}{8}$ ,  $8 \times 6 \times 1\frac{1}{4}$ ,  $9\frac{1}{2} \times 7\frac{1}{2} \times 1\frac{1}{8}$ ,  $16\frac{1}{8} \times 10\frac{1}{4} \times 2\frac{3}{8}$  in.

Fig. 27—Solution and Immersion Bowls, sizes  $7 \times 3$ ,  $8\frac{3}{4} \times 3\frac{1}{4}$ ,  $10\frac{1}{4} \times 3\frac{3}{4}$ ,  $11\frac{1}{4} \times 4\frac{1}{2}$ ,  $12\frac{1}{2} \times 4\frac{1}{2}$ ,  $13\frac{1}{2} \times 4\frac{3}{4}$ ,  $14\frac{1}{4} \times 5$ ,  $15\frac{3}{4} \times 5\frac{3}{4}$  and  $17\frac{3}{4} \times 6\frac{1}{2}$  in.

Fig. 28—Ceylon Tea Pots, Individual, sizes  $1\frac{1}{2}$ , 2 and 3 pints.

Fig. 29—Cuspidor, 7 in. dia. by 4 in. high.

Fig. 30—Cream Pitchers, capacity  $\frac{1}{2}$  pint.

Fig. 31—Male Urinal, seamed, capacity 1 quart.

Fig. 32—Female Urinal, seamed, capacity 1 quart.

Fig. 33—Bed or Douche Pans, Seamless, size  $15\frac{3}{4} \times 11\frac{3}{4} \times 3$  in.



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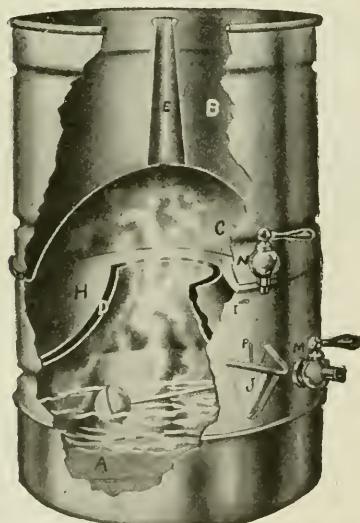
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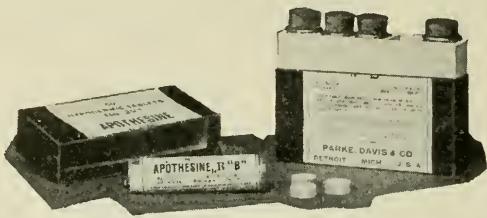
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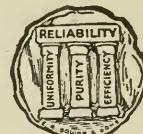
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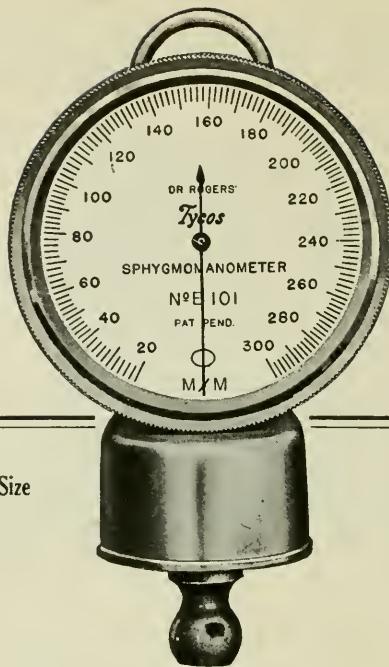
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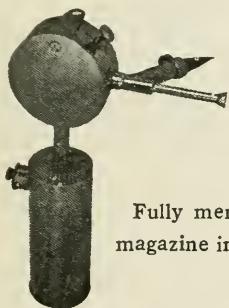
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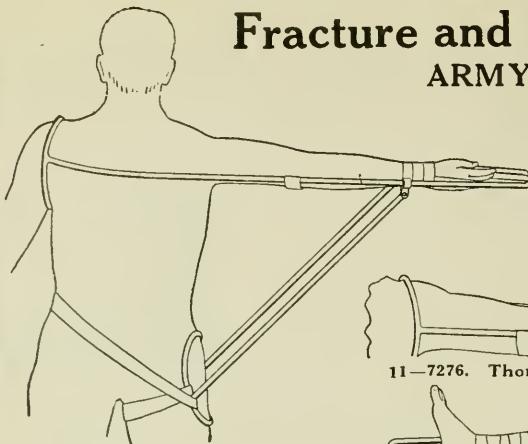
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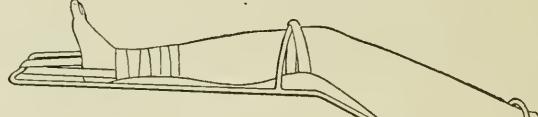
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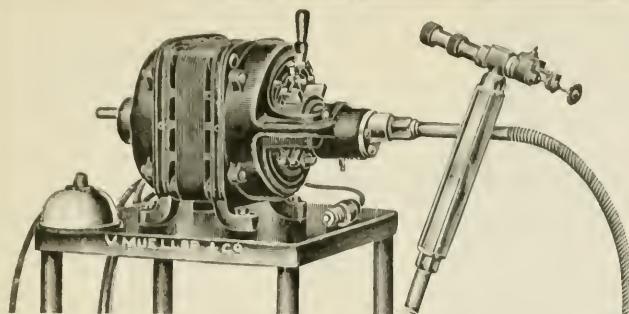
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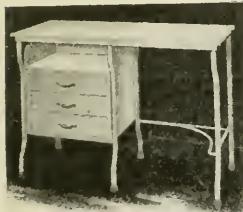


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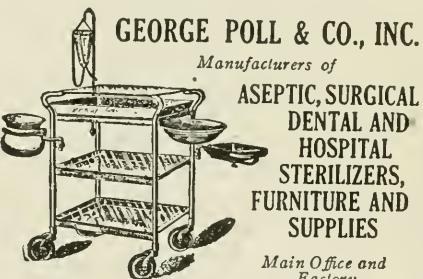
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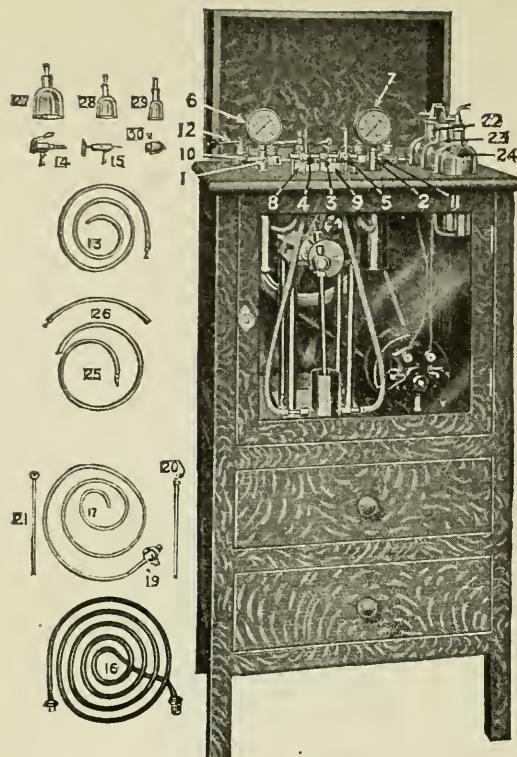
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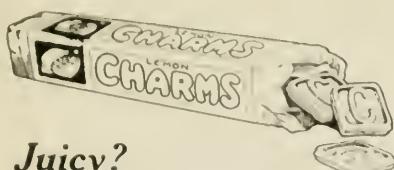
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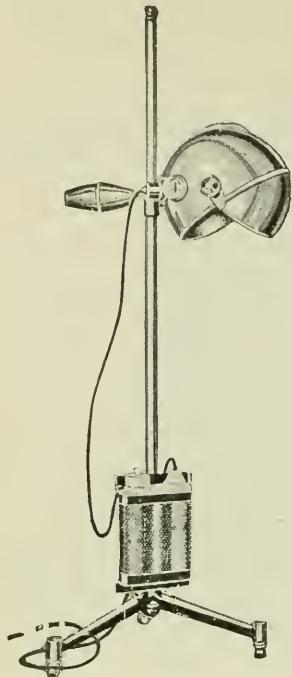
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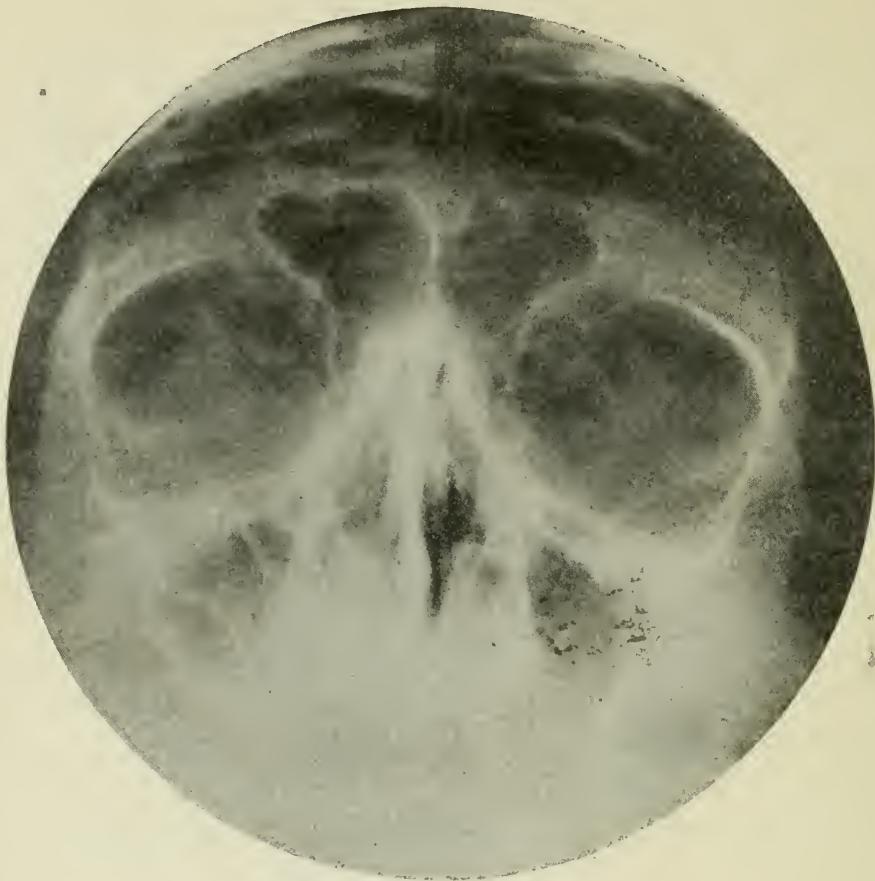
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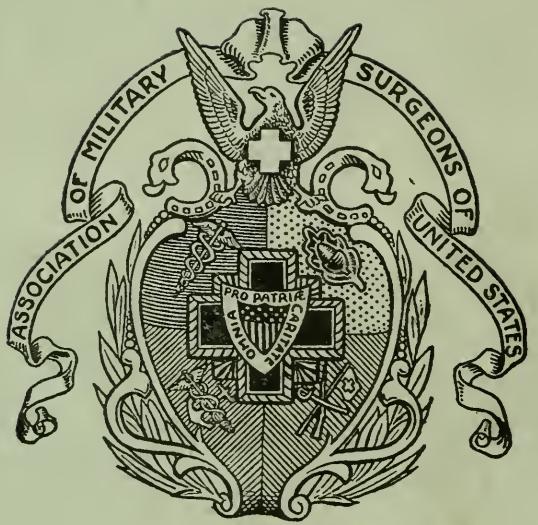
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